NATIONAL FISHERMAN

FEBRUARY 1960

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A completely new kind of fishing rope which combines Nylon with flax has been developed by Columbian research. This rope possesses qualities not found in any other rope. Overcoming the drawbacks of an all-synthetic line, but taking advantage of Nylon's great strength, Columbian Nyflax rope means longer life – greater fishing profits.

Nyflax stays wet and runs cool even when used with power winches. There's nothing like it for purse lines, hanging lines and particularly for deep-water lobster pot warp (Regular or Cable laid). Available in a complete range of sizes, either right or left lay. Sold in coils; special lengths made to order. Lobster Pot Warp sold in special 30 lb. carton coils.

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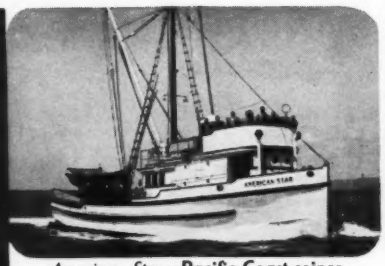
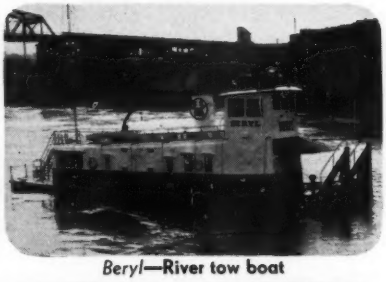


American Star—Pacific Coast seiner

Bering Sea—Alaskan seiner

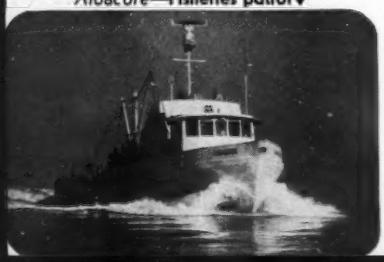
Marie G. Smith—Deep sea tug



Beryl—River tow boat

North Sea—Atlantic dragger
Albacore—Fisheries patrol▼

Michele A. DeFelice—Offshore tug
▼*Capt. Marie*—Gulf Coast tug



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D. F. Finlayson, B.S.
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Engineering—Applications

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25 ACRES OF MANUFACTURING SPACE

The Lookout

More Selling Needed

The production of fish and shellfish frequently shows marked fluctuations, with varying degrees of abundance and scarcity. Science and research have helped in anticipating and predicting certain trends and cycles, but the vagaries of nature and weather still exert a strong influence that is often difficult to assess.

Last year, for example, the scallop industry experienced record production, due largely to an abundant supply in relatively near-by grounds. Boats landed larger trips, in less time, and prosperity was evident.

However, production soon out-ran consumption, freezer holdings built up, and prices went down. The fishermen were blamed for overproducing, and the industry suffered from prices that were too low to meet costs of operation.

Actually, the problem is not overproduction, but rather underselling. It's difficult, if not impossible, legally at least, to control production. However, it is possible to step up selling effort.

While some foods may have approached saturation in consumption, seafoods have a long way to go before reaching this point. Many seafoods, and particularly scallops, are not even known by large portions of the population.

True, some advertising has been done in selected areas, and the scallop festivals have made many people aware of scallops. But there are still far too few stores and restaurants where scallops are readily available.

There's a big job to be done by the fishing industry in bringing its wares to the attention of the American public. With but a 10-pound per capita annual consumption of seafood, there is a vast opportunity for expanding the market for products of the sea.

Millions of dollars are being spent to merchandise and advertise other food products. Some excellent promotion is being carried on by certain segments of the seafood industry, but for the most part these programs are far from adequate.

With proper advertising, there is no reason why a profitable market cannot be created for all the seafood that is produced. Such a program could be geared to current production, and increased in intensity when catches are high.

Seafood advertising campaigns should be backed by everyone in the production chain—fishermen, boat owners and packers. They all stand to benefit from an enlarged, more stable market. With financial participation by all groups, it would be possible to raise sufficient funds to carry on an effective advertising and merchandising program.

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CONTENTS

Optimum Oyster Production Offered By Pond Farms Through Better Control 7

Stern Trawling Could Replace Side Operation 9

Weather Is Controlling Factor In The Production of California Sardines 10

Trouble-Shooting Marine Ignition Systems 11

To Reclaim Clam Beds With Quahogs in Washington 13

Record California Shrimp Catch 13

Seafood Expansion Program Begun in Maryland 15

Georgia Shrimpers Organize To Combat Shrimp Imports 16

Industrial Fish Catch Shows Increase In New England 18

New Dragger-Net Rollers Reduce Gear Losses 19

Draft Bill To Reorganize Mississippi Commission 22

North Jersey Crab Dredging Legal 22

REGIONS		DEPARTMENTS	
North Atlantic	18	Fishery Progress	4
South Atlantic	15	Equipment & Supply News	24
Gulf of Mexico	22	Boat Catches	34
Great Lakes	30	Where-to-Buy Directory	36
Pacific Coast	13	Foreign Bailings	37
		Boat & Gear Mart	38

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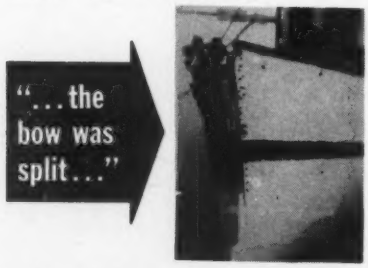
"One of our boats was hit...

by a barge while at anchor in Aransas Bay. The upper portion of the stem was split and crushed in the collision," writes John R. Hardee III, Manager of the J. R. Hardee Shrimp Co., "we placed a rush order for your Titan-Tite Epoxy Resin and these photos show how we used it."



"Bow of the boat after damaged wood had been removed ..."

"a piece of oak ... the right size was not available so we laminated a piece from the two inch rib stock."

Thank you Mr. Hardee ...

Your Marine Dealer has Titan-Tite Epoxy Resin and Surfacing Compound ... or can get it for you.

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FISHERY PROGRESS

► Second Largest U. S. Catch

Records from the Fish & Wildlife Service have revealed that the 1959 domestic fish catch exceeded five billion pounds for the second largest annual catch in history. The largest catch was made with 5.3 billion pounds in 1956. During 1958, the catch was 4.73 billion pounds.

Menhaden catches totaled 2.18 billion pounds, exceeding the previous record of 2.1 billion pounds in 1956. For the first time the catch of fish used for industrial purposes exceeded that used for human food. The Fish & Wildlife Service said that menhaden is the nation's most important industrial fish and the 1959 harvest of this species is more than half a billion pounds greater than in 1958.

► Anti-Cholesterol Research

Following findings on the usefulness of fish oil fractions in reducing high blood-serum cholesterol levels in animals, Assistant Secretary of the Interior Ross Leffler recently announced the details of a stepped-up research and technical assistance program.

Leffler explained that the plans include making available to interested medical and pharmaceutical researchers relatively large samples of purified fish oil fractions and the screening of 25 species of edible and industrial fish to determine whether the types of fatty acids present in these fishes are those useful in dietary and medical treatment of elevated cholesterol levels.

Bureau researchers pointed out that these unique "soft fat" features of fish oils make fishery products especially valuable for inclusion in diets designed to bring about a better nutritional "balance" between the hard and soft fats in the American diet. Many medical authorities have pointed out the desirability of increasing soft fat consumption as a possible means of controlling blood-cholesterol levels.

► Oceanography Research Bill

A bill to advance oceanographic research through a 10-year program was introduced in the House last month. The program of oceanographic research and surveys would promote commerce and navigation, and secure national defense. It would also expand use of ocean resources, authorize the construction of research and survey ships and other facilities, assure systematic studies of effects of radioactive materials in marine environments to enhance the general welfare.

► Refrigerated Water for Whiting

Technologists at the Bureau of Commercial Fisheries' Laboratory in Gloucester, Mass., report that whiting kept in refrigerated sea water have a longer storage life than whiting kept in ice.

Whiting, a soft-textured fish, loses quality rapidly, even when stored in ice. Serious loss in quality may result when, during glut periods, it is necessary to hold large quantities of this fish at the plant prior to processing. The whiting stored in refrigerated sea water were judged by an expert taste panel to be of good quality after 14 days of storage, while those in ice were of poor quality after only 9 days of storage. The fish in refrigerated sea water were of good quality for almost twice as long as the regular iced fish. These studies are being continued.

► To Iron Out Boat Subsidy

Conferees have been appointed by the House and Senate to reconcile the differences between the two Houses in bills passed by each to provide a Federal subsidy in the construction of fishing vessels.

The House Bill authorizes $1 million a year for each of three years, provides for a subsidy not to exceed one third of the cost differential between U.S. and foreign construction, and requires that the vessel be part of a fishery which has been denied Escape Clause relief, which at this time includes only the New England groundfish and West Coast bottomfish segments of the industry.

The Senate version contains no Escape Clause requirement and would therefore make the subsidy available to all fishing vessels; authorized $5 million a year for three years; requires approval of the vessels plans and specifications by the Department of Defense; requires that the vessel delivers its full catch to a U.S. port and that the crew consist of U.S. citizens or aliens legally domiciled in the U.S.

► To Attack Aquatic Plant

Plans are being formulated for a joint Federal-State approach to the watermilfoil invasion which has begun to bother commercial fisheries, at various places along the mid-Atlantic coast. Preliminary plans have been made for a survey to determine the extent of the infestation in the Chesapeake Bay area.

The Service has already engaged in a small-scale program to determine methods of controlling the weed. Several chemicals showed considerable promise. These materials will be tested more fully this year.

► Frozen Breaded Portions Standards

Frozen breaded fish portions ready for cooking have been added to the list of fishery products standardized for quality, the Bureau of Commercial Fisheries has announced. In cooperation with members of the commercial fishing industry, this latest addition to the list of quality standardized seafood products was developed by the Bureau's Fishery Technological Laboratory in Gloucester, Mass.

According to the Bureau's Statistical Branch the U.S. production of this particular product was 16 million pounds in 1958. It is expected that the figure for 1959 will reach 35 million. Past experience with the effect of the quality standard label on fishery products makes 1960 estimates even higher.

► Fisheries Management Report

The University of Washington recently issued a report entitled Biological and Economic Aspects of Fisheries Management. The report covers biological and economic aspects of fishery management; halibut fishery management; salmon management in Alaska; and international trade policies and their relation to fisheries.

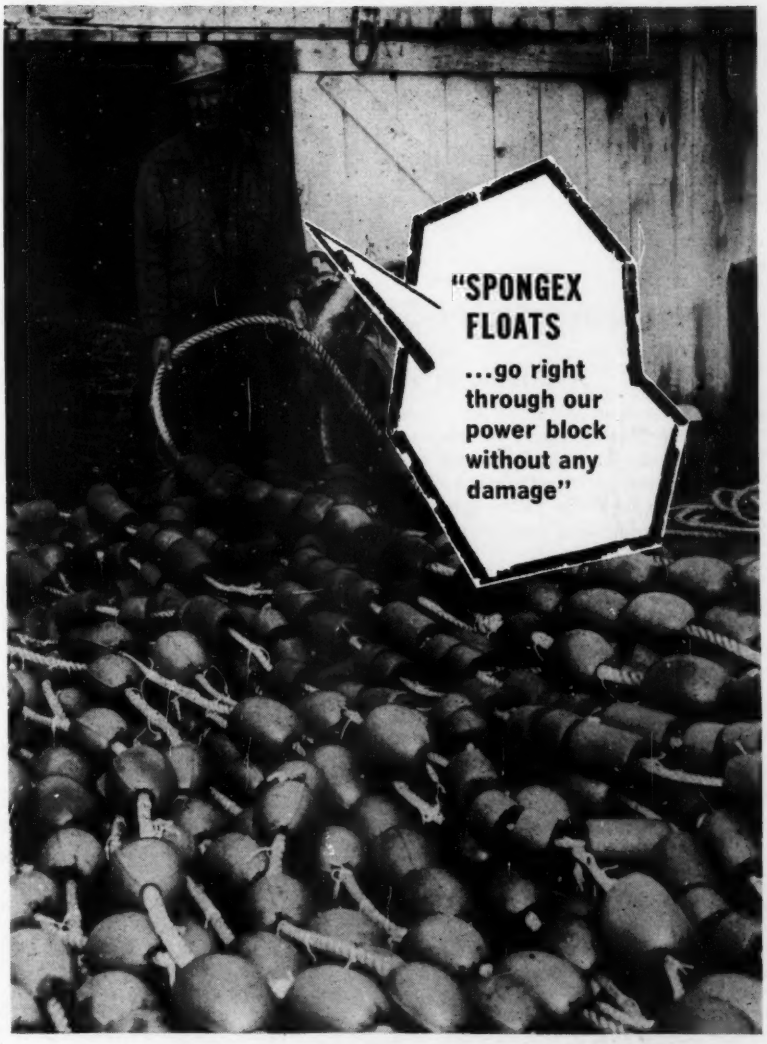
Such factors as the effect of management regulations on the conduct of efficient operations in managed fisheries, the need to limit entry of individuals into certain fisheries, the effect of certain controls on processing and marketing operations, the effect of certain types of controls on costs and profits in the industry, etc., are also covered.

► Shrimp Breaders Levy

The National Shrimp Breaders Association unanimously voted to adopt a voluntary, self-imposed levy on each master case of breaded shrimp products produced to provide a fund for the advertising and promotion of breaded shrimp last month. A committee was appointed to handle the collection and disbursement of the funds: Everett M. Rosenberg, Rubenstein & Sons, Inc., Chairman; Lionel T. Hodgson, Booth Fisheries Corp., and L. R. Alberti, Jr., Alberti Seafoods, Inc., members.

The self-imposed levy is not restricted to Association members, and all breaded shrimp producers will be invited to join in an industry-wide action.

It was also unanimously voted to use the funds so provided in cooperation with the Shrimp Association of the Americas and other allied groups having similar programs of shrimp promotion and advertising.



CAPTAIN OF 65-FOOT PURSE SEINER SWITCHES TO B.F.GOODRICH SPONGEX FLOATS... SAYS HANDLING IS EASIER THAN EVER BEFORE

"Three years ago we switched to B.F.Goodrich Spongex floats aboard our 65-foot purse seiner, 'Veteran'," says Captain Vincent W. Skonsie, Co-owner with his brother Antone, both of Gig Harbor, Washington.

B.F.Goodrich ring life buoys *for fishing boats have all the advantages of Spongex floats. U. S. Coast Guard approved and accepted by commercial lines.*

"There's no maintenance with these Spongex floats. They go right through our power block without any damage. Their weight stays the same—no waterlogging—and because less are needed to do the job, handling is easier than ever before," said Captain Skonsie.

All these advantages listed by Captain Skonsie—and still others—are what have put B.F.Goodrich floats on regular and newly converted seiners in fishing fleets everywhere. B.F.Goodrich floats come in 17 sizes, ranging from 3" x 1½" to 6" x 14". For full information, write to *The B.F.Goodrich Company, 192 Derby Place, Shelton, Connecticut.*

Made under Pat. No. 2,737,688

SPONGE PRODUCTS BY B.F.Goodrich

Announcing a New Fish Netting-

HOPE BLUE LINE

100% Filament Nylon

Featuring NON-SLIP KNOTS and NO-DISTORTION Design

Available in 9 to 36 thread sizes for Shrimping, Dragging, Gill Netting

Backed by over a year's development work, Hope Blue Line Netting is made by a new process which provides increased strength and greater holding capacity. It has strong-hold, non-slip knots, and is designed to keep its shape and eliminate distortion.

We are ready to give prompt, personalized service in meeting your requirements for fish netting of all types. Our extensive manufacturing experience can give you the right net for any fishing need. Inquiries about your problems are welcome.

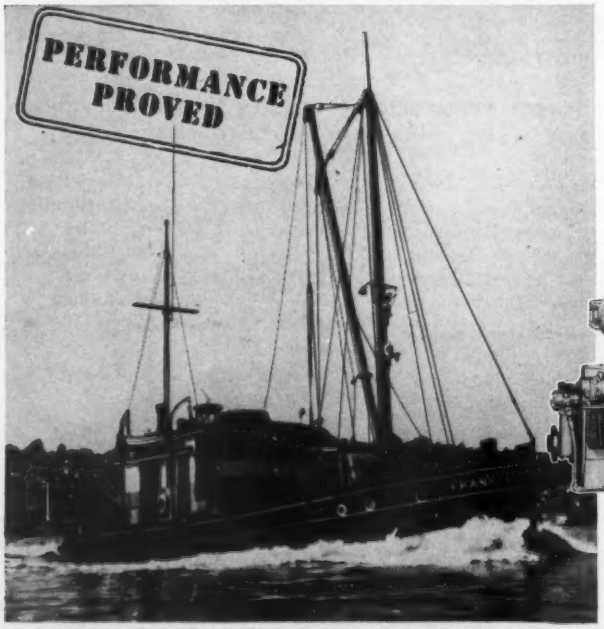
We make a complete Line of Nylon, Cotton and Linen
Trawl Nets, Seines, Pound Nets and Gill Nets

HOPE FISH NETTING MILLS, INC.

HOPE, RHODE ISLAND

LONG DISTANCE: CALL PROVIDENCE, VALLEY 1-6604

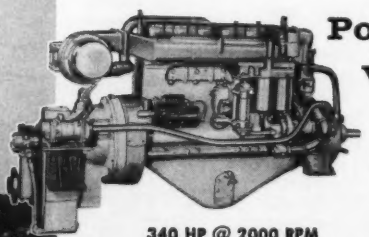
"Frank F" Adds Two Knots, Saves Fuel with new Allis-Chalmers 21000 diesel



The "Frank F" logged 10.2 knots with the 21000 diesel. She is 72 ft long, with 17-ft beam, 8½-ft draft and 42 tons net capacity. The 48x38 propeller is driven through a 4:1 reduction gear.

BM-39

Repowering the trawler "Frank F" with a new Allis-Chalmers 21000 marine diesel not only increases speed by two knots, but saves 1 to 2½ gallons of fuel per hour over what other comparable engines would use. Owner Rollin Crump, Astoria, Oregon, is well pleased with performance — plenty of dependable power, with fuel savings that let him stay out longer and have plenty of reserve for rough weather and heavy seas.



340 HP @ 2000 RPM

Power your boat with this great new diesel!

Let your dealer tell you more about the new 21000 diesel — its advanced engineering for high *actual* shaft horsepower with low maintenance and unusual economy. Call him soon. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

Optimum Oyster Production Offered By Pond Farms Through Better Control

In a report on oyster pond farm studies, George Staples of the Osprey Fishery, Crisfield, Maryland, describes the advantages of pond farming as increased production per acre, faster growth rates, more efficient spawning and setting, easier predator, parasite, and competitor control; and better disease control.

Other advantages cited by Staples include easier access and lower handling costs; extra-legal status of privately-owned ponds; storm and wave action protection; nutrient control and possible fertilization; availability of unused natural ponds and marshes; possible full mechanization; multiple use of the ponds for fish, shrimp, etc.; and possible seafood production in polluted areas.

The disadvantages of pond farming, he said, are borrowed troubles which for the most part are unknown, such as control variables (salinity, temperature, etc.); unknown techniques; construction costs; and the like.

Most oyster biologists and informed persons in the industry have endorsed the need for experiments aimed toward developing this potential oyster culture method, Staples said. However, the method will be ready for commercialization only after continued cooperative research, increased research effort in terms of personnel and dollar budgets, plus increased industry-wide cooperation.

Types of Oyster Farm Ponds

The basic element in the design of a pond farm is whether a tidal, non-tidal, or semi-tidal pond should be used. A semi-tidal pond has an inlet which is periodically opened or closed to salt or brackish open-water, whereas the nontidal pond has no inlet, and the tidal pond has an inlet which remains open .

The main reason for interest in pond-farming is controllability, according to Staples. The natural tidal pond is more controllable than the open water in regard to salt content, temperature, circulation, wave action, etc., and can even be privately owned. The semi-tidal pond is the more controllable than the tidal pond and the nontidal pond is the most controllable of the group.

Some investigators, Staples continued, feel that the tidal pond is the best suited for growing and fattening oysters, but that it is not suited for seed production. Experience has shown that while tidal pond oysters spawn excellently, the resulting larvae is lost to open water before it has a chance to mature and set.

Hence, it is felt that the semi-tidal pond, closed to tidal flow during the spawning and setting period, and then reopened, might well be the optimum design. However, Staples elaborated, several non-tidal ponds have also proven their worth, one of which is in current commercial production of oysters and soft clams. Faced realistically, he said, the non-tidal pond has the greatest controllability and therefore the greatest potential. But, since it is the greatest departure from the natural oyster bed, the least is known about its nature.

Pond Construction

The actual construction of an artificial pond, or the modification of a natural pond, is an engineering problem based on biological design. According to Staples' report, pond length and orientation, with respect to prevailing or storm winds, will determine the circulation pattern of the pond waters and whether the pond can be worked during storms.

Pond width will indicate the construction method, possible growing methods, and the possibility for land-based mechanical handling methods. Pond depth will be determined by construction methods, the manner of salinity control (with solar evaporation and rain-fall considerations), and the possibility of suspension growing methods, Staples explained.

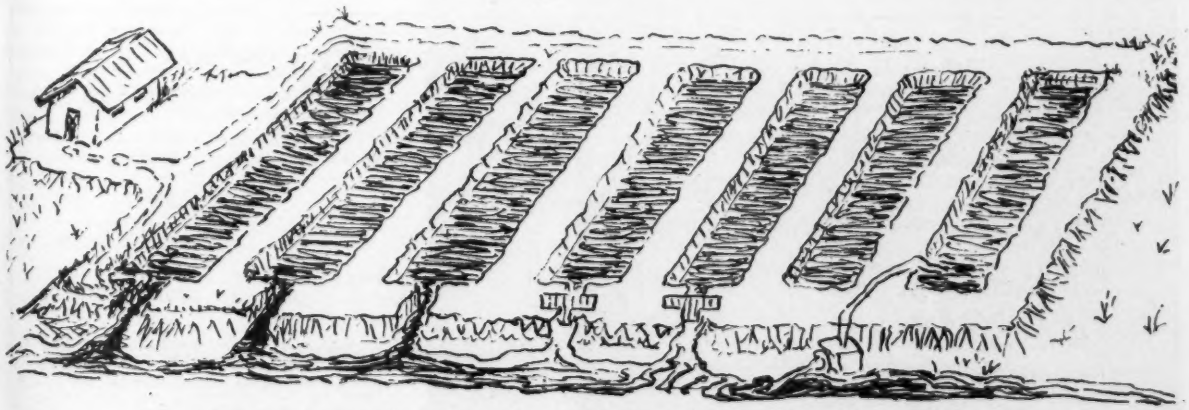
Pond wall design, he said, will be indicated by the soil character, construction method, necessity of storm seawalls, and the possibility of using land-based mechanical equipment for handling the stock. The wall might be vertical or sloped, faced or unfaced. The pond bottom material could be clay or mud, shell, gravel, sand, or a paving material based on the culture method, the type of pond, and nutrient requirements of plankton and oysters. Pond walls may also be indicated to protect the pond from rainfall run-off, surface water contamination, and to moderated wind effects, Staples' report continued.

Equipment Necessary for Pond Farms

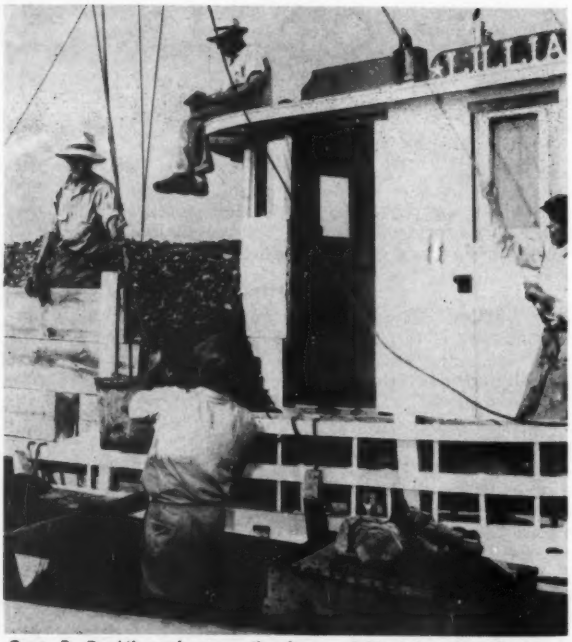
Equipment for a tidal pond could parallel that for the present oyster industry. Mechanical systems, either water- or land-borne, could be used to change the industry to a modern, mechanized, high-speed operation with low unit labor costs, Staples declared. A tidal pond operation would use only that equipment suited to its situation and productive requirements, based on experience and economics. The minimum would likely be a pair of tongs, and a small shell pile.

A semi-tidal pond would require in addition, some sort of inlet flood gate, a culvert with a check or gate valve, and equipment to open or close a dyke or soil wall. A refined flood gate design might include a variable flow control opening to allow the operator to regulate the percentage of pond water which leaves with the ebb tide.

(Continued on next page)



Oyster pond farm designs showing left to right; tidal, semi-tidal, and non-tidal construction.



Capt. R. D. Ailsworth atop pilot house of Virginia oyster buy boat "Lillian", which is loading seed oysters from tonging boat. He now has the "J. C. Drewer" and buys seed oysters for J. S. Darling and Son, Hampton, Va.

The gate could have both bottom and top openings to allow for specific exchange or to promote circulation.

A non-tidal pond would require the most equipment. High-volume low head pumps with ditch or piping arrangements might be necessary to fill or empty the ponds, although suitable flood gates and ditches might accomplish this with the help of tides, if full or empty times were not critical. Salinity correction equipment in the form of fresh water sources (well or pond) with a suitable pump might be needed, as well as other control instruments or facilities to measure and correct pond conditions toward the optimum.

Since cultch effectiveness is increased as much as 1600 percent and growth rates by 200-300 percent by the use of suspension culture now used in Japan and to some extent in Washington state, attention on the East Coast has been directed toward that method as a possible means of pond culture. The equipment used could be rafts, floats, trays, and dry or wet line suspension structures.

Cost Analysis

A study of Staples' Cost Analysis is important. The $1000.00 acre cost of the pond can be reduced somewhat by using natural ponds, he claims. Further reduction might be realized if no pumping equipment is found to be necessary. The cost of marshland in the Chesapeake Bay area ranges from $10.00 to $100.00 per acre. The costs of inspections, tests, chemicals and pumping decrease with an increase in the size of the pond farm. The costs of shell handling, cultivation and harvesting of oysters can be decreased by the use of machinery.

Harvesting costs can be lowered by pumping the pond dry, the report continues. The selling price of the crop is that of shell stock suitable for shucking. Most important is the assumed time for maturing the crop, a conservative three years. Indications are that using established techniques and possibly hybrid oysters, that future pond oyster crops will mature in as little as eight months. An analysis based on one oyster crop per year follows:

Staples estimated profit from a one year crop of 2000 bushels of oysters, as shown in the rough cost analysis, is very favorable and provides the main attraction for the attention of the industry. The rough preliminary return for a one year crop of 1000 Bu./acre is 26%. So even half the production rate will justify investment in an oyster pond that can yield an annual crop.

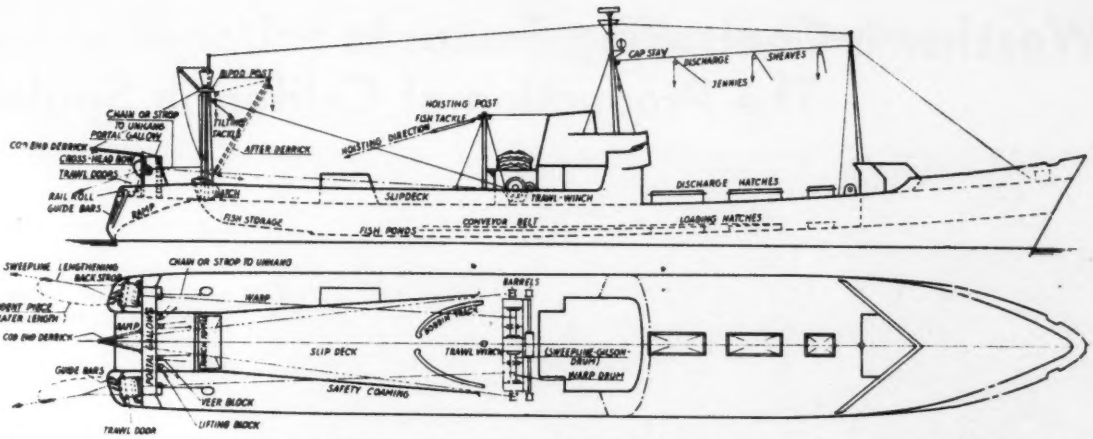
Another important analysis is based upon the possible production of much-needed seed oysters. Because raising market oysters from seed in open-water is a profitable industry, seed culture in ponds can become a reality, these two operations could be combined into a very profitable business. Effort in this regard by investigators have been rewarded with both successes and failures to data. However, the possibility of multiple seed crops in a single year should be considered. The "return" for two crops per year (47%) is better than for a single seed crop, while the figure for the three crops per year is higher still, (58%), according to the report. Whereas the "return" on one year pond market oysters' is the better, the acute need for seed oysters by the industry should be a first consideration.

The matter of minimum economic size of an oyster pond farm is of interest to any potential investor, Staples said. Adequate data is not available at the present time to accurately determine this figure. However, there are several approaches which will shed light on the matter. The assumption of a "required annual production" will allow a farm size calculation. The assumption that the pond farm should "occupy one man full-time" will allow a like calculation. Another possibility is that the "minimum salary of so-many dollars for one man" be the basis for sizing the pond farm. The required "permanent investment", the cash "working capital" and the size of the pond farm are given for each as follows:

In these labor calculations, it is assumed that there are no "work-peaks" which require more than one man and that no "over-time" or such charges are involved. Whereas experimental ponds might be of any size, it is felt that a minimum of one acre should be used to justify the use of a power shovel, the various purchased equipment and the attention to inspection and test schedules.

ROUGH COST ANALYSES OF ONE ACRE OYSTER POND FARM FOR ONE YEAR

	Oyster crop 2000 bu.	2 seed crops 4000 bu.
CONSTRUCTION COSTS (per acre)	$1000	$1000
Cost of brood oysters (5 bu.)	15	30
cultch (2000 bu. shells/crop)	200	400
handling and planting cultch	200	400
inspecting and testing	300	500
pond chemicals	200	300
pond pumping	100	200
labor (1 man/2000 bu.)	400	800
pond depreciation	50	50
misc. costs	100	100
OPERATING COSTS per acre per total crops	$2565	$2780
Cost of harvesting (20¢/bu.)	400	800
interest (6% of costs)	156	228
operation	1565	2780
misc. costs	200	400
TOTAL COSTS	$2321	$4208
GROSS SALES (oysters @ $3 bu. seed @ $1.50 bu.)	$6000	$6000
minus total costs	2321	4208
NET PROFIT (taxes excluded)	$3679	$1792



A diagram showing the deck arrangement and leading of ropes on a stern trawler, with a ramp designed to reduce rolling due to the weight of the catch and for convenience in handling the trawl.

Stern Trawling Could Replace Side Operation

Experts feel greater safety, easier handling, reduced weather effects, and economic advantages popularizing stern trawlers*

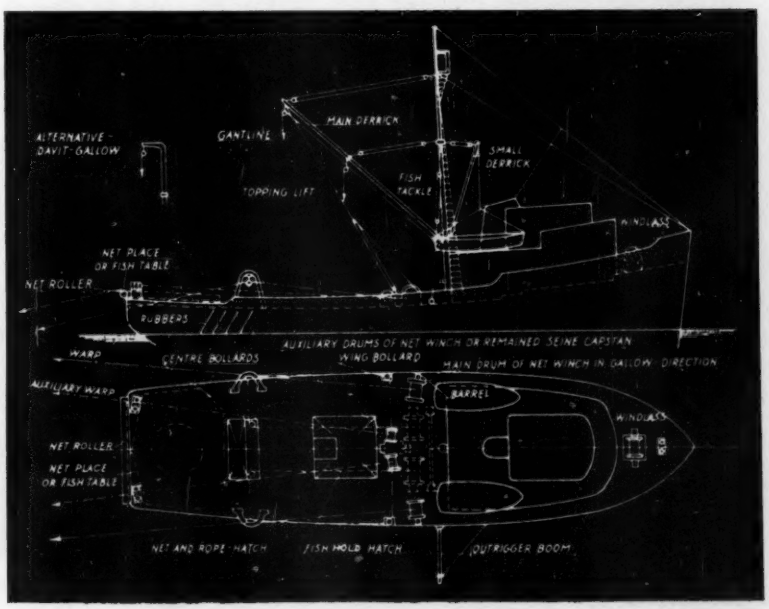
The impact of the stern trawling method upon the fishing industry, although slow, is likely to be very definite and some people are of the opinion that the day of the quarter fishing vessel, in spite of its many virtues, is drawing to a close.

In nearly every case where new fishing vessel projects are debated, the question of stern trawling arises and it is true to say that both the technical press and transactions of technical institutions all over the world are more full of proposals and achievement for the stern trawlers than ever before.

Commander J. C. E. Cardoso of the Portuguese Naval Constructor Corps, at a recent meeting of the Institution of Naval Architects in Lisbon, offered a solution to the problem of controlling fishing operations over the stern. Cardoso's basic idea is to effect complete mechanization of handling operation of the trawl net by adapting the method used in side fishing.

This has been carried out by centralizing the mechanics of the fishing gear at the aft end of the boat, the whole being termed the stern trawling unit or S.T.U. It has the advantage of including features already proven in service. In essence, it consists of a shroudless bipod mast and two symetrically located pieces of mechanism for shooting, controlling and raising the trawl, each consisting of a winch and a rotating crane. This eliminates the gallows system with its attendant warping fairleads and leading blocks. Furthermore, all the operations can be mechanically controlled from the bridge.

An integral part of the scheme as a whole is a large steel folding flush hatch cover, in a frame forming a movable ramp permitting the fish to slide easily to the 'tweendecks without crushing or bruising. The design offers a valuable bonus in deck space, while the concentration of fishing gear aft permits a noteworthy reduction in the length of the working deck which may naturally be used for other purposes. *(Continued on page 31)*



A diagram showing the deck arrangement and leading of ropes of a stern trawler without a ramp. A stern roller is often used for shooting and hauling the trawl, but the catch is sometimes hauled over the side. Rampless stern trawlers were developed as an alternative fishing method for seiners, long-liners, etc.

* Excerpted from material prepared by A. Von Brandt, director Institute fur Netzforschung, Hamburg, Germany and C. Birkhoff, Rickmers Werft, Bremerhaven, Germany, and presented at the 2nd World Fishing Boat Congress.

Weather is Controlling Factor in The Production of California Sardines

California sardine seiners shown at San Francisco anchored at Fisherman's Wharf. Sardine production has increased in recent years due to unusual changes in the fish's environmental conditions in 1957.

The California sardine industry in 1959 topped the 1957 catch by approximately 26.1 million pounds and surpassed the 1956 take by a substantial margin, according to preliminary reports. The 1959 totals, however, could not overtake the mark set in 1958 of 207.4 million pounds, the best haul since 1949.

These improvements in the catches of Pacific sardines, once California's richest fishery, have been encouraging. The fishery had been in a decline since the 1940's, but during 1957, conditions extraordinary in recent California fishing history, contrasted sharply with those of the 1945-56 period. Ocean temperatures along the Pacific Coast, on the average, were higher than at any time in history, while sardines spawned closer to shore than they had in many years. Many people feel this has contributed to the recent increases of sardine harvests.

It is too soon to make a forecast, but it is believed that the percentage of survival of the 1957 class has been better than classes of recent years, and that the class will be large. On hand to participate in the revival of the industry, if it proves to be such, are three plants in San Francisco and five or six in Monterey.

Sardines are interested mainly in three things: food, comfort, and survival of the species. Give them ample food and a good climate and they will spawn along the coast. If, once in four or five years, nature will supply good weather conditions during the spawning season, it is possible that five or 10 adults may survive from the 100,000 eggs spawned by each female, and the breeding stock will thrive as will the fishery.

A Controversial Industry

During the past 50 years no natural resource of California has been the subject of more controversies than the California sardine. It is an industry which started in 1901 with a single cannery in Monterey operated by F. E. Booth Co. and supplied by a few boats 18 or 20 feet long with 6 to 10 hp. engines. Growth was slow and at the outbreak of the first World War a few plants were in operation at Monterey and San Pedro. In 1914 the annual catch was about 30,000 tons.

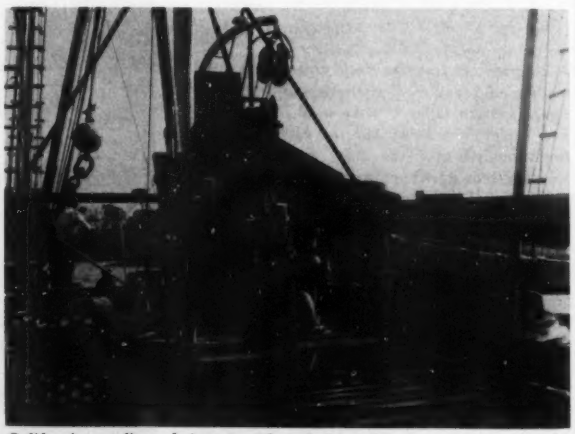
By that time, the boats averaged from 28 to 45 feet in length, powered by engines of from 25 to 60 hp. It is interesting to note that, until about 1930, the price of sardines paid to the fishermen ranged somewhere between $8 and $12 per ton.

The problem of the disposal of the fish offal resulting from the canning operation existed almost unnoticed in the industry for some 20 years, and stemmed from the fact that the Pacific sardine is considerably larger than the sardines canned on the coast of Maine, the Bay of Biscay, and the Mediterranean.

An oval can about six inches long is used, and to make an attractive pack the fish are cut to fit the can. Therefore, the head, the viscera and, depending on the size of the fish, an inch or two of the body are cut off. This amounts to from 25 to 50 percent of the wet weight of the fish. As a consequence, a daily catch of 100 tons of sardines produced about 35 tons of fish offal. A reduction plant was built on the Monterey waterfront and the operator contracted to buy the offal from the canners and reduce it to oil and meal. This was only a partial solution because machinery failures were inevitable, meaning delays for some plants and spoilage for others.

Other canning plants, one by one, out of curiosity or necessity, installed their own reduction machinery, eliminating trucking the offal and saving labor and also discovered that the resultant by-product was in demand and profitable. The same pattern of development prevailed in San Pedro and during the 1920's the F. E. Booth Co. built another plant on San Francisco Bay. Until 1947, a state law forbade the use of any food fish for other than food purposes, but the by-products of the reduction plant were commanding better prices and the temptation to divert a food fish to other uses constantly increased. Thus, the burden of policing a fast-growing industry fell upon the California Fish and Game Commission.

(Continued on page 28)



California sardines being transferred from boats to waiting trucks by conveyor belts.

Taken from material by Julian G. Burnette, chairman California Marine Research Committee.

Trouble-Shooting Marine Ignition Systems

Tips from an ignition expert on how to avoid engine breakdown*

There is more to ignition system maintenance than merely installing points and condenser and installing new spark plugs. While periodic replacement of these parts is essential, there may be trouble unless cheeks are made for other equally important conditions—any of which can cause ignition failure when least expected.

Ignition engineers refer to these conditions as "off-beat" trouble-makers—because frequently they are overlooked completely and often become the culprits in ignition system failure. While some of these conditions can be detected only by a qualified mechanic using special equipment, an untrained mechanic can detect many of them himself—simply by becoming aware of them, and watching for them every time the engine is worked on.

Conventional marine engine ignition systems provide only enough voltage to discharge to ground. Or, in other words, electricity always will follow a path of least resistance. Because of this characteristic, it's continually trying to escape from the path it's supposed to follow through the ignition system. Let a weak spot develop, anywhere in the system, and away it goes—never even reaching the spark plugs in many cases.

Typical Trouble Spots

As an example, consider a brand new ignition system, which is capable of supplying up to 25,000 volts to the spark plugs. Suddenly, a small crack develops in the distributor cap so that only 4,000 volts are required to short to ground at the crack. Until the cap is replaced, total ignition system output will never exceed 4,000 volts. Such a crack is sometimes so small it is barely seen with the naked eye.

Short circuits such as the one described above may exist in practically any part of the high voltage system—distributor cap, ignition cables, and frequently on the spark plugs themselves as conductive deposits, which form on the spark plug insulator and allow the high voltage to short across the insulator to the shell. No matter where they exist, the results are always the same—coil output is drained away, and available voltage is reduced drastically.

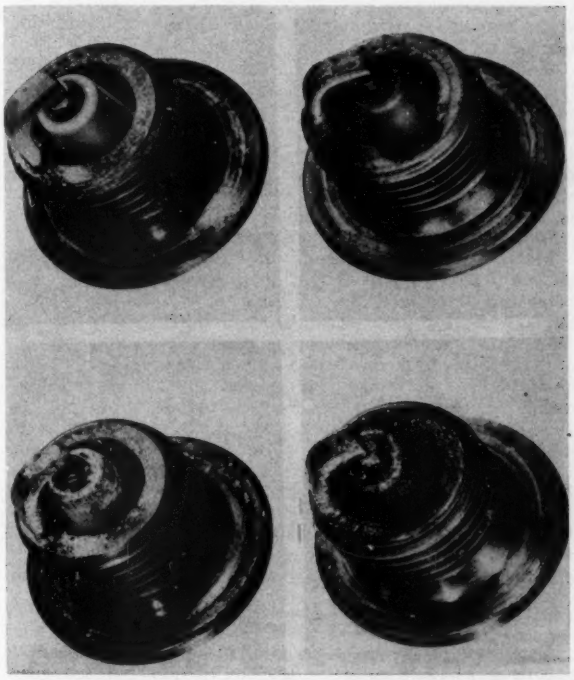
Corroded or eroded terminals on either the distributor cap or the ignition cables—caused by the leads not being pushed all the way in—can cause high resistance, again reducing voltage available to the spark plugs.

Another spot in the distributor cap at which trouble often develops is the small carbon center contact button. If it becomes excessively worn, a gap may develop between it and the metal contact spring on the rotor, resulting in arcing (spark jumps gap), which in turn may cause corrosion and high resistance.

Dirty distributor caps also can be troublesome—especially if the carbon dust, mixing with other contaminants in the air, causes the high voltage to follow a path of least resistance to the wrong insert inside the cap. In addition to causing misfiring, this condition actually could result in spark plugs firing out of order. Marine engines are far more susceptible to this condition because of continual operation under high humidity. Salt spray further aggravates the condition. If the high voltage erodes a permanent path between inserts, the cap must be replaced.

While the distributor cap is removed, the towers which are normally covered by protective rubber boots should be examined. They may be badly deteriorated as a result of excessive arcing—a condition which won't be apparent so long as the boots are not removed. The rubber boots on the spark plugs too should be checked.

Frequently, grease, dirt, or salt deposits accumulate inside the boots and on the spark plug insulators. This may result in a condition called "flashover"—where the high voltage again follows a path of least resistance from the spark plug terminal, over the insulator, to the spark plug shell—never reaching its intended destination, the spark plug electrodes.



Spark Plugs showing Normal Condition—tan insulator and light combustion deposits on insulator; Carbon Fouling—dry, fluffy soot on electrodes and insulator, the result of over-rich mixture; Burned—whitish insulator and electrodes from wrong heat range or high combustion chamber temperature; and Oil Fouling—oily black deposits from incorrect heat range or excessive oil passing piston rings or valve guides.

Installing Breaker Points

Unless the proper tools and knowledge are available the bulk of distributor work should be left to a marine service dealer. The average person can not begin to check such things as "dwell"angle (number of degrees cam rotates while breaker points remain closed), worn distributor cam lobes, or other worn parts in the distributor, without an engine analyzer or distributor tester. He can, however, install new points and a condenser providing he has a feeler gauge to set breaker point spacing correctly. However, an engine always should be retimed after point installation, because too small a space between points retards timing. Conversely, too large a space advances timing.

After the points are installed, the fibre block should be aligned so that it makes contact with the distributor cam all the way across the top surface of the fibre block. If it is not aligned, the block may contact the cam at only one corner, causing rapid wear, and may eventually result in the contacts closing too soon, having an effect on engine timing.

When points are installed, the contact surfaces must be cleaned thoroughly to eliminate contamination from

* By Richard J. Gail, service engineer, Champion Spark Plug Company, Toledo, Ohio.

contact with the fingers and tools. Point contamination is one of the major causes of breaker point failure. The distributor cam should be lubricated with a thin layer of cam lubricant. The proper grade of lubricant is especially important on marine engines, because most of the engines operate in confined areas where air circulation is poor.

Another cause of poor engine performance, which frequently is allowed to go undetected, is reversed polarity, resulting when primary leads on the coil are inadvertently reversed. This little mishap can increase the amount of voltage necessary to fire the spark plugs by as much as 45 percent. And, in marine applications, where engines are under load continuously, this condition is even more apt to cause spark plug misfiring and hard starting than in automotive applications.

Many times, the engine will run fine with reversed polarity, particularly if the spark plugs are new. But, after the plugs have been in use for a while, the engine becomes hard to start and misfires under load.

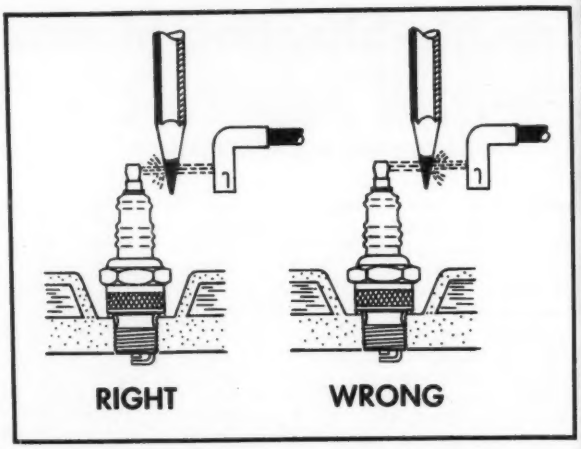
Polarity simply refers to the direction of high tension current flow, which always should be negative at the spark plug electrodes. One reason for this is that it's easier for electrons to leave a hot surface for a cool one than the other way around. In a spark plug, where the center electrode usually is hotter than the ground electrode, it is easier for them to leave the center electrode. Hence, the increase in voltage requirements to fire plugs when polarity is reversed. Incidentally we are not referring to "dockside polarity" or marine electrolysis—which as many boat owners know, causes deterioration of underwater fittings.

Checking Reversed Polarity

Fortunately special tools are not required to check for reversed coil polarity. It can be detected using an ordinary wooden pencil. The spark plug cable is disconnected from the plug and the graphite tip of the pencil is held between the cable and the spark plug terminal. If the direction in which the spark flares as it jumps the gap between the terminal and the plug is toward the plug side of the pencil, or has an orange tinge on that side, polarity is correct. If it flares to the opposite side, polarity is reversed.

In many cases reversed polarity can be determined by examining the firing tip of a worn spark plug. When polarity is reversed, there will be a "dishing" effect on the ground electrode—due to the fact that metal particles are torn away from it during sparking. Heat and chemical attack in some cases, may be so severe they tend to cover up this effect. Nevertheless, it is always there, and may provide a tip-off on the cause of that elusive miss.

There need be no concern about reversed polarity if a magneto system is used. Some magnetos furnish alternately positive or negative current to the plugs. On others, half of the plugs may receive positive current while the others get negative current.



If spark flares, or has an orange tint, on spark plug side of pencil held between plug and plug cable, polarity is correct. If it flares to the opposite side, polarity is reversed.

In addition to indicating whether polarity is reversed, the spark plugs can tell many more things about the condition of an engine. They are, in effect, a barometer of engine performance and knowledge here will enable even an untrained mechanic to diagnose many troubles which occur below deck.

The black, fluffy deposits of a carbon fouled spark plug are a tip-off to a number of conditions that may need attention—over-rich fuel mixture in the carburetor, (resulting from either an improper setting of the high-speed at idle jets) excessive hand choking—or possibly a dirty flame arrester which is restricting air flow into the carburetor.

Carbon deposits also may be an indication of insufficient available voltage from the ignition system. If available voltage is low, voltage supplied to the spark plugs may be insufficient, causing them to misfire and creating unburned fuel deposits on the spark plug electrodes and insulators. If only a few of the plugs are fouled, sticking valves may be causing the trouble.

Carbon fouled plugs also may be the result of excessive dockside idle or long periods of trolling operation. In such cases, it may be advisable to install plugs of a slightly "hotter" heat range, or even plugs with an auxiliary gap.

Auxiliary gap plugs, are manufactured with a built-in air gap between the center electrode and the terminal stud. This gap serves to isolate the coil output from the spark plug's firing end while the coil is being saturated (building up high voltage). When the gap breaks down,

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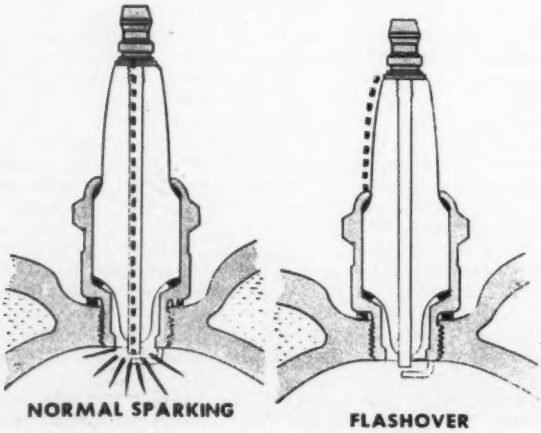

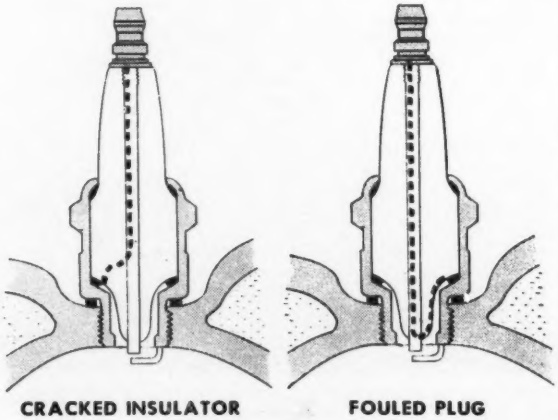

To Reclaim Clam Beds With Quahogs in Washington

Thousands of quahaugs imported from Massachusetts are being planted in Oyster Bay (Washington) and other south Puget Sound areas by the Washington State Department of Fisheries in a mass clam-planting program.

Small test plantings of quahogs conducted the past two years at Pt. Whitney and elsewhere have proved highly successful, said Milo Moore, director of the State Department of Fisheries of Washington. He believes that this mass plant will become the foundation of adequate seed stocks for use on muddy ground and beaches, favored by the Cherrystones, but not utilized by any of our native hardshell clams. "For the time being, we are asking that these clams not be dug, in order to build up a good supply of seed stock", Moore said.

The mass plant is being made from a ton of quahogs, totaling between 15 and 16 thousand clams from two to three inches in length. Previous test plants of quahogs have proved successful, but this is the first large-scale transfer of the shellfish from the East Coast. The plantings now under way will be followed by other mass plants in the San Juan islands in selected mud flats areas. It is the beginning of a long-range, comprehensive program, instituted by the Fisheries Director to fully utilize the State's oyster reserves and public clam beaches both commercially and for the enjoyment of the public for personal use clam digging.

Department personnel, said the Director, have already begun a survey of public tidal areas to determine practical means of transplanting seed clams (both native and imported) from abundant areas to public clamming beaches and deep water areas and for the distribution of native and cultured varieties of clam seed produced by laboratory rearing.

Washington Concerned with Law of the Sea Conference

The Governor of the State of Washington has expressed concern over the outcome of the forthcoming International Law of the Sea Conference scheduled to open on March 27 at Geneva, Switzerland. He stated that the State could lose more under Canada's 12 mile territorial sea proposal than our people realize. He remarked that it may be necessary to send someone to the Geneva meeting, at least to keep the State informed about what takes place at the Conference.

After conferring with the Director of Fisheries and others of the sport and commercial fishing industry, it appears the State's all-out effort to build up the salmon runs returning to Washington streams could be hampered, the Governor said.

He said that it is the State's policy to cooperate with Canada and with our neighboring states in every way to maintain and improve the coastal fisheries resources and every effort to maintain historic fishing rights will be exerted.

If the two countries on State Department level fail at the Geneva Conference to balance these interests, the whole salmon program and coastal bottom fisheries may be affected, the Governor feels.

Shannon Heads Calif. Fish and Game

Walter T. Shannon was named Director of the California Department of Fish and Game by Governor Edmond G. Brown recently. He succeeds William E. Warne, who was appointed Director of the Department of Agriculture.

Mat Ivanovich, Gig Harbor, Wash., owns the 63' salmon seiner "Maria Rose", which is powered with a 150 hp. Lorimer engine and has Snow-Nabstedt reduction gear. Equipment includes Auto-Lite batteries, Plymouth cordage, Raytheon Fathometer, Spongex floats. She is finished with International paint.

Record California Shrimp Catch

The 1959 California ocean shrimp catch totaled 1,777,874 pounds, an increase of 47,652 pounds over the 1958 record figure of 1,730,222, the Department of Fish and Game reported recently. The 1959 record was made possible by increasing quotas in the Crescent City and Fort Bragg area, Director Walter T. Shannon explained.

Area A, California-Oregon State line to Cape Mendocino, led all others with California landings of 1,317,972 pounds, plus about 400,000 pounds landed in Oregon. The 1958 harvest was 1.1 million pounds.

The average catch per fishing hour in Area A was 638 pounds for the entire season, compared with 501 pounds in 1958. The Area A fleet operated out of Crescent City the entire season, chiefly off the Klamath River and Redding Rock, working a 20-mile stretch in depths ranging from 52 to 90 fathoms and averaging 65.

Area B-1, Cape Mendocino to Pt. Arena, a record 444,990 pounds landed during the 1959 season, compared to 329,700 pounds in 1958, although rough weather and strong currents had cut down the catch per fishing hour from 656 pounds in May to 464 pounds in June and to 222 pounds in July.

Record Egg Take at Nimbus Hatchery

With a take of 12,964 king salmon and 37,543,000 eggs, the Department of Fish and Game's Nimbus salmon and steelhead hatchery near Sacramento concluded the largest seasonal operation since construction of the hatchery, Director Walter T. Shannon stated recently.

Robert D. Montgomery, Regional Manager, credited success of the year's spawning operation to the ingenuity of Allan Pollitt, Fisheries Manager in Region II; Jim Hinze, manager at Nimbus Hatchery and the Nimbus staff.

"A considerable increase in results over those in 1958 was obtained by the operational procedure of rapid transfer of the salmon to cooler waters of the hurriedly constructed holding base on the Bear River near Emigrant

Capt. Theodore West, Eureka, Cal., fishes tuna, salmon, and crabs with "Mary C." A 65 hp. Caterpillar engine supplies the power to turn 38 x 26 Coolidge propeller through 3:1 Twin Disc reduction gear. Wall rope and Delco batteries are included in the equipment. She uses RPM Delo lube oil.

Gap, and shipment of the salmon eggs to trout hatcheries with favorable temperatures for incubation."

He explained that water in Lake Natoma, behind Nimbus Dam, which is used in the hatchery operation, is too warm for propagation, necessitating the transfer to the Bear River waters. The Federal Fish & Wildlife Service furnished trucks for the transfer. The Nimbus Hatchery was built by the Bureau of Reclamation, which also pays operating expenses.

More than 5½ million eggs have been planted in the gravel beds of the American River because the capacity of the initial installation at Nimbus Hatchery was designed to process only 30 million eggs, Montgomery said.

Urges Hospital Aid for Fish Boat Skippers

Representative Clement W. Miller of California said he plans to introduce legislation to permit owner-operators of fishing boats to receive treatment at U. S. Marine hospitals.

Miller said present law provides that only crew members are eligible and that a boat owner, even though he fishes his boat alone, is not.

"To compare the owner-operator of a 35-foot salmon troller with the owner of a big steamship company or a million dollar yacht is grossly unfair," Miller said.

Gowanlock Addresses California Group

The January meeting of the Southern California Fisheries Association heard Charles Gowanlock of Clifton's Cafeterias, better known in the trade as "Charlie" and one of the real old timers among fish buyers, tell of the trend in seafood merchandising, the improvements observed and offer suggestions for further merchandising improvements.

Monterey Man on Pacific Commission

John S. "Bricky" Crivello, business agent and secretary of the Seine and Line Fishermen's Union of Monterey has been appointed to the Pacific Marine Fisheries Commission by Governor Edmund G. Brown of California. Crivello succeeds Eugene D. Bennett of San Francisco, whose term expired. Other California members were reappointed. They include Vincent Thomas of San Pedro and Richard S. Croker, chief of the Marine Resources Branch, Division of Fish and Game.

Oregon Boat Owners, Union Reach No Agreement in Dispute

No working agreement with the ottertrawl division of the Alaska Fishermen's Union, was the recommendation of the Fishermen's Marketing Association of Oregon, Inc., an association of drag boat owners and skippers which met in Astoria last month.

According to reports, the chief obstacle to a settlement was a clause which recognized the union as a sole bargaining agent for the employees aboard any boat whose owner had signed a working agreement with the union, thus giving the association authority to collect dues and union initiation fees from the crews.

A second clause, boat owners stated, provided that if a man hired as a crewman for a vessel refused to allow such withholding, he could be discharged. The authorization for the boat's captain to collect dues or initiation fees would be submitted in writing by the union to the boat's captain.

These two clauses, boat owners argued, would make the boat owner or skipper an agent for the union. The union, however, argued that these clauses are part of a regular and legal union shop agreement.

The union also stated that it had stated in its proposed working agreement that the boat owner or captain could hire any man he chose to work on his boat, but, that after a 30-day period of employment, the man would then be informed that he would be required to become a union member. They were asking for a regular union shop agreement, the union claimed.

Members of the association and union negotiators agreed that the union would sign a working agreement, if such an agreement was settled with individual boats, rather than with the association as a group. This was done because the association said it could not sign a working agreement without becoming involved in legal problems.

The union reported that up to January 25 no association member had signed a working agreement. The association represents 25 boats, and membership in the AFU local is about 80 men.

At a meeting on January 25 drag boat owners and captains stated that they would not sign with the ottertrawl division of the AFU. They still held that the union shop and other working rules were the chief causes on which they made their decision.

Fisheries Management Agents Named for Oregon and California

Two fisheries management agents for the Bureau of Commercial Fisheries in Seattle, Washington, were stationed in Astoria, Oregon and Eureka, California last month. Purpose of the assignment is to enforce international treaties and acts for protection of the Pacific halibut and other fishes. The men will check fish landings at docks and cooperate with the Coast Guard, state fishery agencies and other organizations with their enforcement activities and in making off-shore patrols.

They are Elmer Copstead assigned to Astoria, and Laurence Knapp assigned to Eureka. Both men will be working out of the regional office in Seattle under Gomer W. Hilsinger, fishery management supervisor.

Copstead will cover the entire Oregon coast and part of southern Washington. Knapp will be responsible primarily for the Northern California coastline, but he will work in close cooperation with the Bureau's area director at San Pedro, California.

Suggests Using Salmon River for Fish Propagation Purposes Exclusively

The Salmon River Fish Sanctuary bill, to eliminate present provision permitting dams of maximum 100-ft. height on that river, was amended recently by Sen. Richard Neuberger of Oregon. The proposed change in

Glen Fulton, Madras, Ore., owns the 46' albacore troller, "Venture II". The boat has a Caterpillar 80 hp. Diesel with 3:1 reduction gear and a 38 x 27 wheel. Included in the equipment is an Apelco receiver and direction finder, Wood Freeman automatic pilot, and two 3-spool Akervick gurdies with reverse boxes.

the pending bill is in response to requests from conservationists and fisheries groups at hearings held by Sen. E. L. Bartlett (Alaska) in Astoria, Ore., and would leave the Salmon River for fish propagation purposes exclusively until the fish passage problem is solved. The Salmon River is the most important spawning area for salmon in the Snake River system, and dams on it would do major damage to salmon runs, fishing industry men believe.

Oregon, Washington Revise Columbia River Season

The Oregon Fish Commission and the Washington Fisheries Department have agreed in a revision of the fall fishing season on the Columbia River this year, Chairman Harold T. Johnson of the Oregon Commission announced recently. The revision announced by Johnson advances the closing data of this season to October 14, but it adds a new open season from October 25 to October 31, inclusive.

There will be no closed period during the new one-season, he states. Previously, the fall season has been fixed for September 15—October 16, inclusive, with closed periods from Thursday, 6 p.m., to Monday 6 p.m. each week. Johnson said that the late October season was added to permit gillnetters to harvest the chum salmon run which normally appears in the Columbia the last few days of October.

Book Describes Marine Borers And Methods of Combatting

The microscopic creatures which eat marine pilings, bottoms of boats, and cause hundreds of millions of dollars in damage annually are the subject of two papers in a book edited for the University of Washington by faculty member, Dr. Dixy Lee Ray. The papers discuss the two principle enemies of marine timbers—shipworms and Limnoria— and methods to combat them. The book is titled "Marine Boring and Fouling Organisms".

It is estimated that replacement of a pile costs an average of $500. In salt water, replacement is necessary every four years because of Limnoria, Ray said. The most promising thing so far is that the pests will not attack certain trees which deposit silicon in cell walls when they are grown in the tropics.

SOUTH ATLANTIC

Seafood Expansion Program Begun in Maryland

The Tidewater Fisheries Commission has begun gathering scientific information for a planned expansion of Maryland's seafood production. Dr. H. C. Byrd, commission chairman, announced that a team of scientists and management experts would begin the project by exploring Worcester County waters seafood potential. He said the preliminary survey of Sinepuxent and Chincoteague bays and the Atlantic Ocean front will be but the first of a series of broad scientific-management studies which eventually will cover all Maryland Tidewater areas.

"The surveys are expected to determine the seafood potentialities of each county and enable the Tidewater Fisheries Commission to take such steps as may thereby be shown to be necessary." The survey will delve into planting methods, types of bottom available, flow of tides, oysters best suited for cultivation there, danger from predators and related matters.

The primary mission of the survey is to gather information which will guide the TFC in its seafood development programs, Dr. Byrd said. Ralph C. Hammer, biologist in charge of the TFC's oyster propagation, will head the study group. Also scheduled to participate are James B. Engle, head of seafood research for the U.S. Fish & Wildlife Service in the Middle Atlantic area; Fred Seiling of the Department of Research and Education's Biological Laboratory at Solomons, and Dr. Michael Pelczar, professor of microbiology in the Department of Bacteriology at the University of Maryland. Byrd said Dr. Donald Pritchard of the Johns Hopkins Chesapeake Bay Institute also will be asked to join in the cooperative study.

Maryland Tidewater Head Cites Likeness Between Oyster Growing, Land Farming

To Dr. H. C. Byrd, of the Tidewater Fisheries Commission, planting oysters in the Maryland's Chesapeake Bay is about the same as planting a field of corn in Carroll County, because the principles are the same although their application is different. Byrd wants the state to do the same thing for the watermen that the University of Maryland, through its agriculture extension program, has done for the farmers.

Byrd sees his main task in work to revitalize Maryland's seafood industry as adapting the extension service principles to the bottom of the bay.

The fisheries chief is concerned over the tendency of some watermen to take oysters before they reach good marketable size, cutting down on the supply in future years. "Instead of selling crop rotation to the farmers, the watermen must be convinced they need to replenish oyster shells and to leave a quantity of brood oysters on the bottom", he continued.

Byrd pointed out it would be foolish of a farmer to chop down a field of corn for silage when the stalks had grown only four or five inches high instead of waiting until they reach their maximum height. Byrd said the time may come when it is profitable to place commercial fertilizer in the bay to stimulate growth of grass and other organisms on the bottom which furnish food for fish, oysters, clams and other seafood.

Byrd sees the need for more research in the seafood industry, the same type of applied research that has helped farmers produce more crops in less acreage. Research is also needed, he says, on diseases affecting oysters and other mainstays of the seafood industry.

Byrd further stresses the need for developing leadership among the watermen, "just as we had to go out and develop leadership among the farmers to get the exten-

sion program off the ground". And he is optimistic about pumping new life into the seafood industry. "With what we have learned and the experiences we have had in agriculture", he said, "we can start out, and instead of taking 40 years we can get it well on its way within four years."

Dredge Hibernating Crabs For Data On Maryland Harvest Prediction

A team of biologists headed into upper Chesapeake Bay waters recently to solve the mystery of the widely fluctuating crab harvest in Maryland. Chesapeake Biological Laboratory's research vessel *Cobia* was slated to dredge for hibernating crabs between the Patuxent River and the Bay Bridge, as one phase of a long-range effort to predict crab harvests and protect future populations.

The *Cobia's* dredging runs will criss-cross the Bay in a sampling pattern designed to discover if crabs have any highly specialized preferences regarding hibernating quarters. Crab Specialist David G. Cargo will attempt to devise an adequate population-sampling technique. It is already known by scientists that all the crabs that will be caught in the Bay in a given summer are also present during the preceding winter, as there is no significant outside source.

The dredged crabs will be practically motionless; their activity almost ceases when water cools to 41 degrees, and the bottom temperature is now about 40 degrees; most of the hibernating crabs, as shown by preliminary runs on the Patuxent, will be either large ones (six inches or wider) which escaped last summer's harvest, or they will be the very small ones (from ¼ to 1½ inches) which hatched last summer and which will enter the harvest for the first time late next summer as 3½-inch soft crabs.

The Laboratory's director, Dr. L. Eugene Cronin, feels that Maryland crabbers and packers will benefit considerably if harvests can be predicted even six months in advance. The dredging program will also help in many other phases of crab research, including study of causes of good or poor crops, effect of harvesting on total numbers, and migration patterns.

No Deep-Water Potomac Oysters Found

A recent survey trip of the Potomac River by the Maryland Commission of Tidewater Fisheries indicates the absence of deep water oysters according to chairman Dr. H. C. Byrd.

The trip proved beyond doubt that there are no oysters of any consequence in the river beyond 28 or 30 feet in depth, dispelling the myth of millions of bushels of oysters in 90 feet of water', said Byrd. It was developed, though, that the river has rehabilitated itself to a considerable extent since 1950 in the same areas, and that there are oysters that could well be taken without injury to future supplies if the catching was done in restricted areas and under very close supervision. This is particularly true of the Swan Point area that is closed most of the time by testing of guns at Ft. Dahlgren, and in an area off Cornfield Harbor, Byrd continued.

Byrd also said that no taking of oysters should be allowed in such quantities as might in the slightest degree run any risk of depleting the supply of brood oysters. There is great scarcity of oysters on the Virginia side of the river. The State of Maryland has a gold mine in the river, one that will not be worked out, if a proper management program is developed for it, under which about the same quantity of oysters would be taken out each year as would be replaced by nature with proper planting of seed and shells. There are in the Potomac some fine possibilities for development of seed areas, Byrd stated.

The trip brought together representative watermen of Somerset, St. Mary's, and Charles counties, to develop a better understanding of one another's problems. The net result is the prospect of mutual respect and better relations in future years, Byrd said.

Georgia Shrimpers Organize To Combat Shrimp Imports

The organized shrimpers of Chatham and Liberty Counties have banded to fight against Japanese and Indian imports that are competing with the industry on the Georgia coast. Meeting with Congressman Prince Preston recently, the Chatham Seafood Producers Association made an agreement with the congressman to go all out in a legislative battle to place the oriental shrimp under a strict quota basis.

Members of the association contended at the meeting that the shrimp industry finds it difficult to compete with the cheap labor product of Japan and India. Congressman Preston revealed that he was fully aware of the shrimpers' plight and said he was ready to go to bat for them.

It was noted that shrimp is specifically named in the law as being exempt from any tariff restrictions or quotas. There is a possibility that relief may be secured through the Federal Trade Commission, Congressman Preston pointed out. Preston will explore the possibility there of securing more rigid enforcement of packing and labeling requirements, he told the group.

Preston suggested that the shrimpers here and throughout the Atlantic and Gulf Coastal areas get behind him and the other coastal congressmen in an effort to secure hearings on a score of bills already introduced in the house designed to provide a measure of relief sought by the shrimpers.

The congressman recommended that the shrimpers in Savannah seek hearing on all bills and thus be in position to provide the committee and the other members of Congress with a clear and accurate picture of the condition as it is today and the relief desired. The attorney for the association will contact other shrimp associations in Florida, Alabama, Mississippi, Louisiana, Texas, South Carolina, North Carolina and Virginia to urge their cooperation of their delegations in Congress in securing passage of the desired legislation.

New Oyster Shell Dredging Contracts To be Limited to Two Year Trial

The Maryland Board of Public Works last month rejected all bids for dredging oyster shells from the Chesapeake Bay on the grounds it could not figure out which would provide the best return to the state.

The board then announced plans to take new bids in a form that would make it clear which was the best for the state. It also would limit the contractor to two years on a "pilot basis".

Dr. H. C. Byrd, chairman-director of the Tidewater Fisheries Commission, wants the shells from buried deposits to use as the base for new oyster beds. He started action last September.

The state will ask for separate quotations of the price each firm would charge for delivering 200,000 cubic yards of shells a year to the state, and the price it would guarantee for the specified amount of shells it wanted to keep. The bidder could purchase no more than 200,000 cubic yards a year.

The Oyster Shell Corporation, a Baltimore subsidiary of an Alabama firm, conducted explorations of the floor of the bay last summer at the request of Dr. Byrd. He said later the supplies of old shell deposits appeared to be virtually unlimited.

First Seafood School in Maryland

The first Seafood School in Maryland held its first session in the City Hall in Crisfield last month. The school is for the purpose of having seafood packers, watermen and others learn more about the products of the Chesapeake Bay area, their growth, conservation, etc. The main

speaker at the school was Francis Beaven, senior oyster biologist for the State of Maryland, of Solomon's Island. He talked on two subjects—first, "Biology of Oyster Reproduction", and second, "Problems of Growing Seed Oysters".

Virginia Oystermen Question Raising Oyster Ground Tax

The Virginia Oyster Planters' and Packers' Association has requested detailed and deliberate study of the regulations governing the oyster industry proposed by Governor Almond recently. This includes raising the oyster ground tax, which is now 50 cents and $1 per acre, reportedly to double that amount. Governor Almond feels that the state has been shortchanged by allowing this low rental fee. The state needs funds drastically for research and other necessary matters relating to the oyster industry, the Governor said.

The Board of Directors for the Association has asked the State Commission of Fisheries to reconsider some of the changes proposed. They think the proposed increase in license fees needs more study. As for the proposal that the Governor or the Commission be permitted to cancel leases on three years' notice—they wonder why the power should be given to the Governor too instead of being restricted to the Commission which is close to the oystermen's day-to-day problems. The proposal to double the rental fee on oyster grounds is not fair, they say, because there are many unproductive acres.

They agree that there probably should be some increase in charges, but they argue that changes should be of such nature that they could not be rescinded readily from one biennium to another. The Board has suggested an alternate revenue-raising procedure—a temporary across-the-board 50 percent increase in all charges currently assessed against oystermen, and including a 2 percent bushel tax. They see this as a stop-gap revenue producer for the state, to be effective only during the period when study of the whole matter is made.

Early Shad Netting in Virginia

Shad fishing got off to an early start this year, with arrivals in Hampton Roads late in January. Isaac Fass, Inc. of Portsmouth, who operates eight pound-nets, put over their rigs sooner than usual, in anticipation of an early run of shad.

Fass reports a sizable portion of the New Bedford scallop fleet still is landing catches at their plant. Their sea bass production is running ahead of last year, and catches of fluke have been steady.

Hampton Roads Dragger Landings Rise

Dragger landings for the Hampton Roads, Va., area during January 1960 totaled 2,692,700 pounds for an increase of 658,100 pounds over January 1959's catch. Responsible for the rise were increases in butterfish of 98,100 pounds (147,800); fluke totaling 13,800 pounds (276,200); scup amounting to 471,900 pounds (1,364,900); sea bass of 17,300 pounds (808,100); whiting, 18,200 pounds (37,600); mixed fish 15,900 pounds (18,900); and croackes of 7,800 pounds (11,900). Hampton Roads pound net landings showed an increase in mixed fish of 8,400 pounds to top the January 1958 mixed fish catch.

Favor Dredging Queens Creek

The office of Congressman Thomas N. Downing of Virginia has announced publicly the contents of a letter from the office of the chief of engineers of the Army which indicates that the Army Engineers now favor a survey of Queen's Creek, Mathews County to determine the feasibility of dredging a channel there. The estimate of this survey is $12,000 and the time to make it will be about eighteen months.

The importance of dredging Queen's Creek was summed up in a letter to Congressman Downing from one of his constituents, a Mathews County property owner. The letter said in part: "I am convinced that with a proper channel into Queen's Creek, it has unlimited potentialities for development of a vigorous seafood industry. There is quite a trade in seafood now, mainly crabs and oysters, but it is greatly hampered because deep draft vessels cannot get into the creek."

The 63' shrimper, "Ethel Walling", owned by Liberty Seafoods, Inc. of Beaufort, S. C., fishes for the St. George Packing Co., Fort Myers Beach, Fla. She is powered by a 120 hp. Caterpillar engine.

Garner Replaces Whitaker in N. C. Fisheries Association

North Carolina Fisheries Association executive secretary, Fred Whitaker, recently stepped down from that activity. The pressure of his own business would not permit him to continue the effort which he carried on since 1956.

At that time, George Garner who acted as secretary-treasurer of the association before Whitaker, took over in that capacity again. Fred Whitaker has assured Association officers that he will continue to consult with them on matters of which he has knowledge, and which would be of benefit to them.

Gorton's of Gloucester Packaging Shrimp

Gorton's of Gloucester, Inc., is packaging shrimp in its new Miami plant acquired when Gorton's merged with the Florida Frozen Food Processors, Inc., according to a plan of merger announced by E. Robert Kinney, President of Gorton's, and Sydney K. Opler, President of Florida Frozen Food Processors, Inc. Gorton's anticipates a 50% increase in plant production.

National Fisheries Center Proposed

Representative John McMillan of South Carolina, has proposed a seven member commission to consider and submit recommendations for a National Fisheries Center in Washington, D. C. The Center would include wholesale and retail marketing facilities for fish and shellfish; piers for fishing boats; seafood restaurants; marine supply stores; office space and facilities for fishery brokers, commission merchants, and commercial fishery organizations; a national aquarium with a display of fresh water and salt water specimens of fish and shellfish; a fisheries' museum; an auditorium, exhibit hall, and meeting rooms.

NORTH ATLANTIC

Industrial Fish Catch Shows Increase in New England

More food fish was landed in Gloucester last year than in any other New England port. The principal New England fishing ports in 1959 produced less food-fish but more industrial-fish than the previous year, according to a preliminary report.

Industrial fish landings totaled 228 million pounds, 6 percent more than the previous year, while total food-fish landings were 466 million pounds.

The total ex-vessel value of $42 million for all landings was about the same as the previous year, in spite of generally lower ex-vessel prices in 1959.

Gloucester landed 154 million pounds in 1959 ahead of Boston with 111 million, New Bedford 70 million, Portland 56 million, Rockland 42 million, Provincetown 15 million, Point Judith 11 million, Woods Hole 4 million, and Stonington 3 million pounds, for the foodfish totals.

Ocean perch continued as the leading food species landed at New England ports in 1959, as 136 million pounds were brought to the docks. Portland and Rockland had heavier landings of this fish than in the previous year.

Haddock landings totaled 96 million pounds in 1959 and was the next leading food species. Boston was the leading haddock producer with 70 percent of the total. Whiting, with a total of 82 million pounds was next, seventy-five percent of which was landed at Gloucester. The 1958 total was also 82 million pounds at all ports. Total landings of the other important food species at the New England ports in 1959 were: flounders 50 million, cod 30 million, and pollock 21 million pounds.

Sea scallops, the most valuable of the New England ocean food species, set a new record volume in 1959. A total of 20 million pounds was landed, 90 percent of this at New Bedford, the nation's leading scallop port.

The industrial-fish fleets at New England's ports produced 228 million pounds of fish for use in animal food and fish meal in 1959. This was 13 million pounds more than the previous year, as menhaden were more abundant in North Atlantic waters. Poor conditions in the fish-meal market in 1959 precluded an even greater increase. Some fish-meal plants shut down before the end of the year due to the heavy inventories and poor market for meal destined for poultry feed. Point Judith continued as the leading industrial-fish producer with a total of 91 million pounds, trailing were Gloucester with 75 million, and New Bedford with 38 million pounds.

Landings at Boston, Gloucester, New Bedford, Provincetown, Woods Hole, Mass.; Portland, Rockland, Maine; Point Judith, R. I. and Stonington, Conn. represent about 75 percent of all New England fisheries.

The New England fishing fleets operated at capacity in 1959 and landed about 33,400 trips of all types as compared with 32,600 trips the previous year. Good relations between fishermen and vessel owners continued in 1959. Many vessels improved their physical condition with funds obtained through the Bureau's Fishery Loan Fund.

New Bedford Scallop Production Up 107,000 Pounds in January 1960

Scallop production in New Bedford during January exceeded January 1959 figures despite the move south by several of the scallopers during the month. John V. Mahoney, statistician of the New Bedford U. S. Fish & Wildlife Service office, reported nearly 900,000 pounds of scallops were brought in during the month as compared to 793,000 pounds in January 1959.

Capt. Tom Kelly, skipper of the 110' steel trawler "Terra Nova". The vessel is owned by Herbert F. Greene of Boston, Mass. and James Thompson is mate. Fishing gear is supplied by Westerbeke Fishing Gear Co., Inc.

Officers Elected at Meeting of New Bedford Seafood Producers

Leif Mikalson was re-elected president of the New Bedford Seafood Producers Assoc. at its annual meeting and banquet recently. Octavio A. Modesto, general manager, reported 19 new vessels have been admitted into membership since last July and that the total membership stands at 116.

Harold Nickerson was renamed vice-president; John J. Gobell, treasurer, and John A. Murley, secretary. Directors are Peder Eisland, Napoleon Holmes, Morris Rosenberg, John Bendiksen, Captain Murley, Felicio Lourenco and Michael Smith, scallop owners; Mr. Gobell, Jacob Jacobsen, Leif Jacobsen and John G. Murley, owners of large draggers, and Mathias Bendiksen, James Dawson, Rudolph Matland, Ernest Murley, Mr. Nickerson and John A. Sylvia, small dragger owners.

Boat Building Subsidies Opposed in New Bedford

Opposition to proposed Federal legislation designed to subsidize fishing vessel construction in this country has been registered by New Bedford Seafood Producers Assoc., it was announced recently. The move came as a mild surprise. House and Senate bills sponsored by Senators Kennedy and Saltonstall and Representative William H. Bates provide for assistance to boat owners competing with cheaply-built foreign fishing vessels.

The bills, drafted as an aid to New England's fisheries would authorize the Government to pay domestic vessel owners roughly the difference between the cost of building new ships in American and foreign yards. Boat owners are required by law to build their craft in this country.

Octavio A. Modesto, general manager of the association, said it is opposed to passage of the subsidy measure because "local fishing vessel owners would suffer". He said the resale value of any vessel in the fleet built in the last few years would automatically drop one-third once a subsidy measure is passed.

"Such a bill tends to help speculators and undesirable promoters", Modesto said. "Prime benefactors would be the shipyards. They would get orders that they wouldn't, otherwise. "Since we do not have large volume operators here and no speculators, the bill would not tend to help New Bedford's fleet. Instead it would tend to produce a flood of boats and at the same time devaluate the vessels already in the fleet".

Boat owners here apparently are not faced with any major problem involving vessel replacement.

Lobster boats at dock of Independent Lobster Co., Rockland, Me.: left to right, "Hazel B." owned by Elmer Johnson; "Ace", Chrysler-powered boat owned by Capt. Herbert Rector; and "Moonlight" owned by Capt. Lavon Ames of Matinicus, powered with a Chrysler Crown engine, used for freighting lobsters.

New Dragger-Net Rollers Reduce Gear Losses

Gerhard A. Paulsen of Mattapoisett, Massachusetts, has been granted a U. S. Government patent on construction of steel-reinforced rollers for dragger nets to help fishermen prevent gear losses on the fishing grounds. Steel-reinforced rollers are so attached to the net that in event of a cable break, all rollers remain attached to the net and the broken cable passes freely through the rollers. The life of the rollers is prolonged as they can be re-treaded and losses caused by splitting and chafing of the rollers are eliminated.

The invention would replace the wooden rollers now in use by commercial fishermen. The present arrangement has several disadvantages for when the steel cable that passes through the wooden rollers is broken by an underwater obstruction, all rollers are lost. The wooden rollers are chafed badly during dragging operations and it is not practical to retread them.

Paulsen had made up a 500 pound string of rollers for experimental use aboard the New Bedford dragger *Solveig J.* and a 16-ft. string will be tested aboard the government fisheries research vessel *Delaware.*

Maine Sardines Meet High Ratings Consistently Under Grading Program

Nearly 90 percent of the 1959 Maine sardine pack of 1,750,000 cases qualified for a fancy or extra standard rating under the state's mandatory quality grading program. All others, with the exception of 5,736 cases, received a standard classification and the latter had to be re-labeled and sold as sub-standards, according to a grading laboratory report released by the Maine Sardine Council last month.

A Council spokesman stated that "the record was an outstanding achievement in food processing and a solid tribute to the efficiency and value of the grading program. This activity was permanently established at the start of the 1958 season by an act of legislature and provided that every lot of sardines packed must be graded for quality before they could be sold or shipped from a plant. The program is under the jurisdiction of the Department of Agriculture and conducted at a modern laboratory established by the Council at Bangor.

Maine Lobster Catch up for 1959

The Maine lobster catch increased 500,000 pounds in 1959 over 1958, with predictions that demand for lobster will remain good and prices high. Maine's 1959 lobster landings totaled 18,263,000 pounds compared to 17,713,000 taken in 1958.

Geoducks Planted in Rhode Island To Test Possible Cultivation

Twenty-three geoducks have been planted in Rhode Island waters as an experiment in the belief that they can be cultivated and grown here. The geoduck comes from the West coast. It is a huge soft shell clam weighing three or four pounds or more.

Carmine J. Maisano, administrative assistant to U. S. Sen. John O. Pastore, is the prime mover in the effort to see if the mammoth-sized Puget Sound clams will take hold here. The meat from a single geoduck is about equal in quantity to the meat of a panful of clams at a Rhode Island clambake, he said.

Maisano said he wrote to John L. Rego, state director of agriculture and conservation for Rhode Island, advising him of the strides taken by Washington to promote its fisheries operations.

The transplanting of the West Coast clams was conducted by Robert Campbell, senior biologist for the Rhode Island Division of Fish and Game, who planted 10 in areas at the head of Bristol Harbor and in Mill Gut along Colt Drive. Both places are closed to shellfishing. Campbell, who was assisted by Peter Dalpe, a biologist's aide, planted 13 in Wickford, at Salt Pond in Point Judith and in Greenwich Cove and the Potowomut River.

He waited for the low tide to plant them upright in holes dug at least 30 inches deep. The shells averaged from four to six inches in length.

No attempt will be made to cross-breed these clams with those of the state's variety. Campbell noted that the experiment is simply an attempt to establish the West Coast species in Rhode Island waters. Campbell said a check will be made in the spring to see if the transplanted shellfish are still alive. An examination also will be made of the clams' condition, the bottom in which they have been placed and whether they have spawned. In the fall another check will be made to see if a successful clam set has accumulated in the transplant areas.

New Equipment for Maine Boats

The Portland, Me. dragger *Elinor & Jean*, Capt. Lewis Thompson, hauled out at Story Marine Railway, So. Portland, for installation of new 3½" Tobin Bronze shaft, propeller reconditioning and replacement of zincs. The yard installed a new Bendix DR-12, 200-fathom depth recorder in the dragger *Vagabond*, owned by The Harris Co.

Capt. George B. Fahey of Bremen, Me., has installed a new Bendix Skipper 101 radiotelephone, from The Harris Co., in his lobster smack *Beverly Ann.*

Capt. Hugo Lehtinen of St. George, Me. has installed a new 2-drum Hancock winch on one of his draggers. Holding 1200 ft. of ⅜" wire per drum, the alloy cast iron winch has quick-acting foot brakes and clutch levers that are arranged for one-man operation.

CUMMINS MARINE DIESEL USER REPORT

DAVID H.

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Captain Daniel H. Hart, owner of the menhaden seiner "David H", Cape May, New Jersey, reports: "I have been using Cummins Diesels since 1940—and in all that time they have given me perfect performance. Cummins engines are tops, and so are the Cummins people with whom I have been dealing. From my experience, Cummins Diesels deserve the highest rating possible." The "David H" is powered by 2 NHS-6-M Cummins Diesels.

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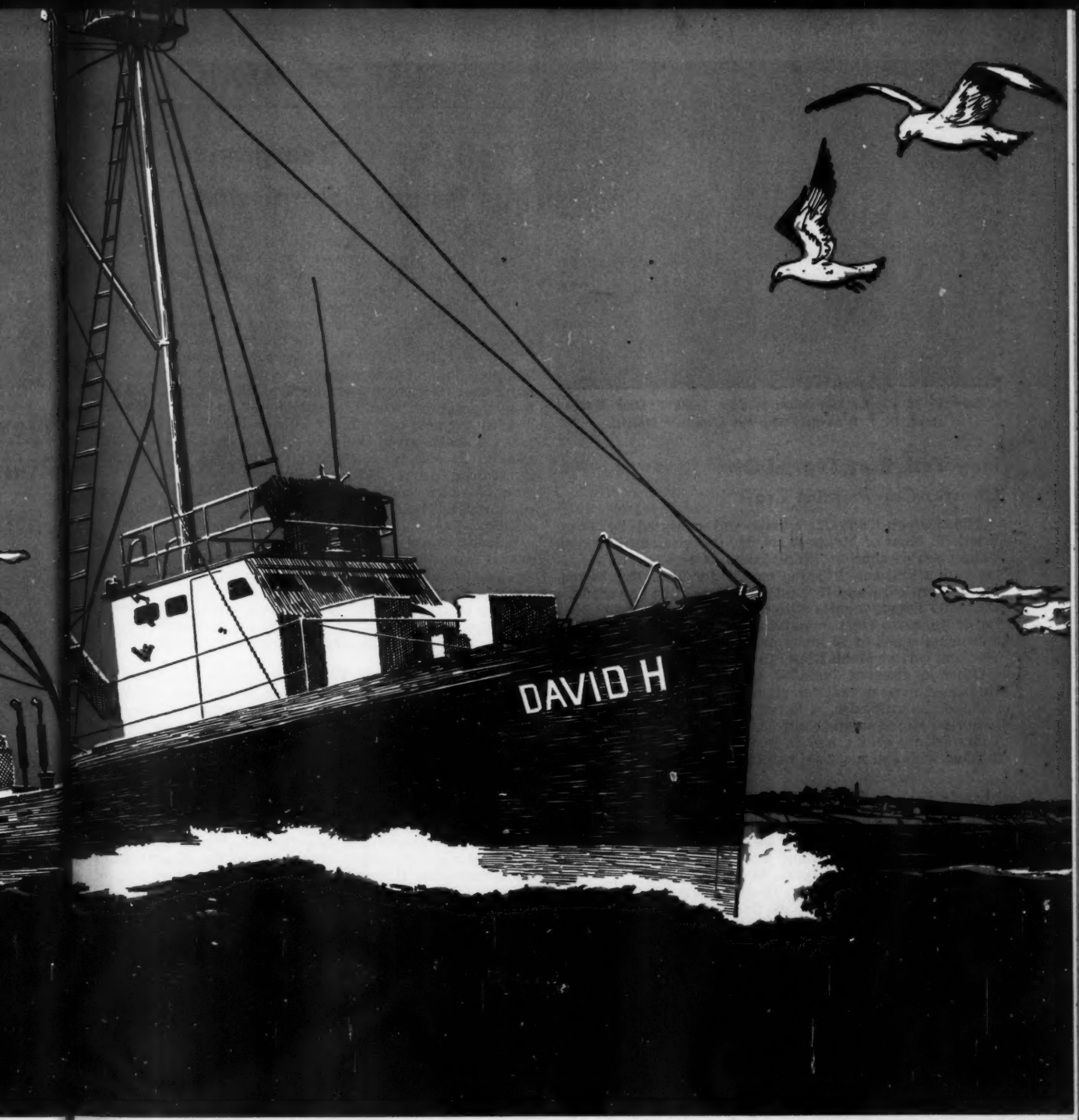

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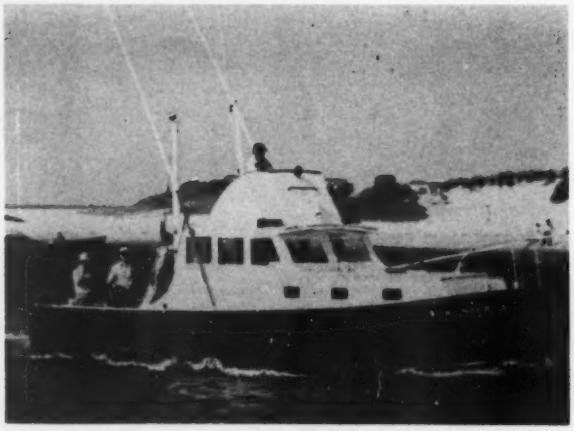


"Kuno II", 35' charter boat owned by Capt. Frank T. Moss of Montauk, N. Y. is powered with two Osco 4DF Diesels.

New York Boat Typical Of Charter-Commercial Craft

The 35-foot, *Kuno II*, owned and operated by Capt. Frank T. Moss of Montauk, N. Y., is representative of a large class of charter fishing boats of commercial documentation that carry fishing parties for hire. The 13 ton, wooden hulled, *Kuno II* is a twin-screw craft powered by Osco 4DF Diesel engines with 2:1 reduction gear developing 68 hp. each. They swing 20 x 18 Columbian wheels for a cruising speed of 10 knots and a top speed of 12 knots. The boat carries Mobil Diesel fuel oil and lubricants.

Other equipment includes Mustad hooks, a 65-watt Hudson-American radiotelephone, a Ray Jefferson 3-band radio direction-finder, a Sonar depth indicator, Willard batteries, Morse engine controls, White Corsair compasses, Tobin Bronze shafts, and Everdur fastenings. The boat is finished with International paints.

North Jersey Crab Dredging Legal

The North Jersey Commercial Fishermen's Association has won a long sought legal battle with the New Jersey Department of Conservation, Shellfish Division to dredge for clams in the Sandy Hook Bay area.

Crab dredging had been declared illegal for a long while but never enforced until this year when sport clubs brought pressure for enforcement. State wardens quoted two statutes which they claimed applied to restricting crab dredging. The first reads no shell fish can be taken from the waters of the state of New Jersey by any means of mechanical power, and the second reads it shall be illegal to tow any type of dredge over any natural oyster beds in the waters of Sandy Hook Bay.

The Commercial Fishermen's Association contended the first law did not apply because crabs are not shellfish but are a crustacean not under the Shellfish Division's jurisdiction. Crabs in New Jersey are regulated by the Fish and Game Council which has no prohibitive crab dredging laws.

The Association also contended that there have been no natural oyster beds in Sandy Hook Bay for the past 25 years. The dredged crabs were taken from dredged channels which could not be considered natural beds, it claimed, and therefore the second law could not apply.

The State attorney general's office has rendered a legal opinion that the statutes do not apply and that North Jersey crabbers could dredge with the restriction that no boat shall have in its possession any clams or oysters while engaged in crab dredging. If any fisherman shall catch any appreciable number of oysters in the crab dredges he shall move to other grounds. All clams and oysters caught during crabbing shall be returned to the water immediately.

GULF OF MEXICO

Draft Bill To Reorganize Mississippi Commission

A legislative bill to reorganize the Mississippi Seafood Commission is being prepared, with the approval of Governor Ross Barnett, for introduction into the state legislature. Governor Barnett took office January 19th. He had campaigned promising aid to Mississippi's seafood industry that included renovation of antiquated seafood laws and reorganization of the commission.

The new proposal would expand the membership of the Seafood Commission from five to nine members and require that they come from the seafood industry. Old seafood regulations would be abandoned and new ones created by the new commission. Such a drastic change would mean a shake-up in the entire Mississippi Seafood Commission. It was expected that the original bill designed by seafood packer William Simpson would be watered down to curb some of the powers granted to the new commission. The Commission maintains a full-time office at Biloxi.

Barnett would turn the Commission over to members drawn from the seafod industry. Reportedly the sweeping new measure was designed by one of Barnett's coast leaders, seafood packer William Simpson.

Reps. Jerry O'Keefe of Harrison county and Merle Palmer of Jackson county are expected to handle the bill for the administration. They indicated the measure may be introduced soon.

O'Keefe said he feels the feature of the reorganization proposal is that it would create a commission made up solely of people who are actively engaged in the seafood industry. The present five-member commission requires only one member to represent packers and one the fishermen.

None of the commissioners would receive a salary, only a per diem for attending meetings and a limited amount of expenses when on duty assigned by the commission. The measure will do away with the job of attorney and leave the selection of the number and salary of all commission employees to the discretion of the commission. Present law spells out the employees of the commission.

The Brownsville, Tex., shrimper "Gen Wainwright" has a 120 hp. Caterpillar engine turning a 42 x 32 Michigan propeller through 2:1 Twin Disc reduction gear. Owned by Capt. Harold Anderson, the 60' craft uses Yocam batteries, Plymouth cordage, Linen Thread nets, Northill anchor, White compass, Raytheon Fathometer, and Stroudsburg hoist.

Officers of Mississippi Seafood Association and Governor Ross T. Barnett. L to R: Bill Simpson, pres., Mike Sekul; Gov. Barnett; Bill Cruso; and Charles Weems, vice pres.

Mississippi Reefs Producing 1500 Barrels Oysters Daily

About 1500 barrels of steam and raw stock oysters are being removed daily from the Pass Christian, Miss., tonging reefs, Mayor Francis Hursey reported. He said about 1200 barrels are removed for steam stock and between 400 and 500 barrels of raw stock. This amounts to a market value of over $6000 daily, Mayor Hursey noted. Tonging activity centers over a reef covering an area of about two and one half miles by a mile.

"We've been protecting the reef for 10 or 12 years", Mayor Hursey commented. "And we're watching the operations very carefully to insure the reef is not depleted." The mayor estimated that on clear weather days an average of over 200 boats of various sizes congregate to work the reef area.

This is the first year, the mayor stated, the reef has been opened for tonging of steam stock oysters. Previously, he recalled, it was open solely for tonging of raw stock oysters. All operations are by hand tonging only, he noted.

Mayor Hursey commented: "I feel the emergency ruling that opened the reef to steam stock tonging, if an emergency ever existed, no longer exists and the ruling should be repealed." Referring to the work done in cultivating the reef, Mayor Hursey said, "We're hoping that this will open the eyes of the people in the industry toward better conservation methods and eventual elimination of power dredging altogether."

Mississippi May Open Reefs to Dredging

The Mississippi Seafood Commission is being faced with a decision to open state dredging reefs up to oyster men or keep them closed. The reefs were closed to dredging during 1959. A recent inspection trip proved inconclusive and further study is being done by the Commission with the aid of marine biologist William Demoran, who has stated that there were enough oysters of marketable size to allow a short dredging season.

Mississippi Commission Halts Bids to Dredge Oyster Shells

Members of the Mississippi Gulf Coast Seafood Association were successful in their petition to the Mississippi Seafood Commission to hold up bids for new hydraulic dredging of so-called "dead oyster reefs". The Seafood Commission announced that three bids will be held in consideration for a period of two weeks while a survey is being made by the Commission, and local seafood packers and fishermen.

The Seafood Association maintains that Mississippi oyster bottoms are very limited and that any hydraulic dredging would prove harmful to existing 'live" oyster reefs as well as destroy beyond repair state oyster bottoms. They point out the fact that "dead shells" are pumped up from depths, under bottom, up to sixty feet, and that these deposits were made through the centuries and that these reefs would normally become productive again when enough fresh water was diverted into the area.

New Tower at Brazos Santiago Light

A new antenna tower was erected recently at the United States Coast Guard Brazos Santiago Light Station, Port Isabel, Texas. It was installed for the purpose of increasing that station's radiobeacon signals.

The new antenna tower is 300 feet high and greatly increases the output efficiency of the station. The stronger radiobeacon signal, now available from this station, will provide improved electronic navigational service to fishing vessels having direction finders and operating in the western Gulf areas.

Gulf Landings Top 1958

The production of fish and shellfish at principal localities in Florida (west coast), Alabama, Mississippi, Louisiana, and Texas for the year 1959 exceeded that of the previous year in all classifications except blue crabs, which lagged approximately ½ million pounds behind.

Landings in 1000 pounds: in 1959 were shrimp (headsoff) 94,696 over 91,268 in 1958, edible finfish 9,140 against 8,109 the previous year, blue crabs 8,972 compared to 9,-334 in 1958 and oysters (barrels) 463,784 to top 394,985 for the corresponding period the year before.

All Gulf coast showed an increase in shrimp landings in 1959 over the previous year, except Florida west coast with a decrease of 7 million pounds.

Official total headsoff shrimp landings in Texas for 1959 totaled 45.1 million pounds, as compared with 42.4 million pounds in 1958; an increase of 6.3 per cent.

Gore President of Texas Shrimp Group

At the tenth annual meeting of the Texas Shrimp Association in Corpus Christi during January, Wright Gore of Freeport was elected president; Pete Peterson of Aransas Pass, vice-president; and Sam Snodgrass of Port Isabel, secretary-treasurer.

Directors elected at the meeting are Sydney Herndon of Corpus Christi; Mrs. Stella Ewing and L. G. Reisman, Port Isabel; Orleans Eymard and N. A. Hardee, Brownsville; Orville Jackson, Rockport; Shelly Key, Port Lavaca; Carlton Crawford, Palacios; and Fritz Toom and Roger Foss, Freeport. Some 300 delegates attended the meeting.

Louisiana Using Dead Reef Shells

About 100,000 barrels of dead reef shells were planted in Lake Borgne, Louisiana, near the Mississippi state line. While the early oyster set in May was poor because of heavy spring freshets, there was an exceedingly heavy catch in September. Already these oysters are over one inch in length and growing rapidly. It is felt that the use of dead reef shells was most successful, and would be of great help in the future in rehabilitation and maintenance of the beds.

EQUIPMENT and SUPPLY NEWS

New Hope Filament Nylon Netting

A new 100% filament Nylon netting, called Hope Blue Line, is being manufactured by Hope Fish Netting Mills, Inc. It features a strong-hold, non-slip knot, and is designed to keep its shape and withstand distortion.

The netting is available in 9 to 36 thread sizes for shrimp and dragging trawls, and is the result of over a year's development work. It also will be made for gill nets.

New management recently took over the Hope Netting firm, with Gilbert R. Bodell, Jr. as vice president. He has had 12 years' experience in the manufacture of Nylon textile products. George B. Plouffe, who has been with the Company for 9 years, remains as plant superintendent.

Hope will continue making cotton netting, in which it has specialized in the past. Cotton nets for seines, trawls and pounds are produced. Other products manufactured by Hope include gill nets of bonded and unbonded filament Nylon; linen pound and gill nets; Nytate netting, which is a combination Nylon and acetate; and nets made of braided Nylon twine.

Stronger Sisal by Columbian Rope

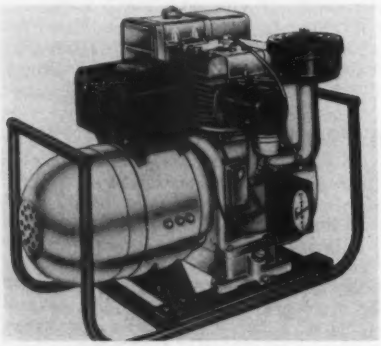
A new 100 percent Sisalana rope, claimed to be 20 percent stronger than previous sisal ropes and with unequaled performance, has been offered by Columbian Rope Co., Auburn, N. Y. According to Columbian, the new rope has improved appearance, handling ease and wearing qualities.

Made of pure sisalana fibre to insure top performance, the rope is water- and rot-proofed. It is constructed to resist kinking and hockling, and to give greater strength, which on the average will meet the figures shown on Federal Government specifications T.R. 605A for manila rope. Available in three strand thread sizes through ¾" diameter, the rope supersedes Columbian Radium sisal line in these sizes. The breaking strength in pounds of the new sisal rope varies from 450 to 5,400 and its working strength from 90 to 1,080 pounds.

New Gerin Oil Condition Indicator

The Gerin Corp., Avon, N. J., has announced a new Model DG Oil Condition Indicating Meter for gasoline and Diesel engines. The Indicator is a gauge type meter which reveals at a glance the condition of the engine oil, with respect to whether it is time to change oil or filter, and detects hidden engine defects that affect the oil.

The meter responds to changes in the oil due to contamination by dilution, water, running on dead filters, etc., and is not affected by variations in crankcase temperature. It is readable whether the engine is running or stopped, since the meter pointer remains on reading.



Winpower Model G3536BPI, 3500-watt electric plant is available in 115/230 volts, 60 cycles.

Gunther Is Waukesha Product Manager

Frederick J. Gunther

Frederick J. Gunther has been named Product Manager of the Marine Engine and Public Works Divisions of the Waukesha Motor Co., Waukesha, Wisc. He joined the Waukesha Motor Co. in 1940, and has served in various capacities in the Sales Department, and has recently concentrated his activities in the sales and applications of the Marine and Public Works markets. Gunther attended the University of Wisconsin and was awarded a Bachelor of Science degree in mechanical engineering. He entered the University of Minnesota and earned his Masters degree in mechanical engineering in 1939.

Mobil Oil Consolidates Marine Sales

Richard C. Schnepf, marine sales manager for Mobil Oil Company, has announced the consolidation of marine sales activities into the Mobil organization.

The changes were brought about by the merger of General Petroleum Corporation, West Coast affiliate, and Magnolia Petroleum Company, Southwest affiliate, with Mobil Oil Company, operating division for Socony Mobil Oil Company in the United States and Canada.

Marine sales now has four districts in the United States. Districts, managers and headquarters are: Atlantic, Marvin W. Smith, Jr., New York; Great Lakes-Rivers, W. D. Fletcher, Cleveland; Southwest, K. K. Marston, New Orleans; and West Coast, Sam T. Couch, San Francisco.

Mr. Marston was branch manager of the Magnolia marine sales department. Mr. Couch was manager of the General Petroleum marine sales department.

New Winpower Electric Plants

Three new 3600 rpm. portable gasoline electric plants featuring automatic idling control designed to reduce noise, save fuel, and increase engine life have been introduced by Winpower Manufacturing Co., Newton, Iowa. The units feature automatic "Econ-o-mizer" idling control for idling until a load of 100 watts or more is applied, at which time it revs up to operating speed and voltage. When the load on the plant is removed, it once again drops back to an idling speed. All units are powered by 4-cycle air-cooled Briggs & Stratton engines.

Winpower Model G 1536BPI, weighing 112 lbs. for easy moving, is rated 1500 watts, 115 volts, 60 cycles at 3600 rpm. Winpower Model G2536BPI, rated 2500 watts, 115 volts, 60 cycles, is also available in 115/230 volts and weighs 173 pounds. Winpower Model G3536BPI is a 3500-watt unit designed for portability, low initial cost, low operating cost. The unit weighs 221 lbs. and is available in 115/230 volts, 60 cycles.

Standard equipment includes stop-switch, pilot light, vibration dampers, rope or recoil starter, two 15 amp grounding type receptacles and one 30 amp, 3 wire twist lock receptacle (2500 and 3500 watt models) and convenient carrying handle or dolly. These new units are the latest addition to a complete line of engine-generator sets from 600 watts through 100 kw, powered with gasoline, gas and Diesel engines.

Cummins Engine Co., Inc. display at the New York National Boat Show featured the 335 hp. NRTO-6-M, left; 600 hp. VT-12-M, center; and 175 hp. JT-6-M, right, Diesel engines.

Battery Powered Winch by Tiger

High portability is a feature of the "Little Tiger" battery powered winch made by Tiger Manufacturing Co., 2312 West Pacific Coast Highway, Long Beach 10, Calif. Deriving electrical power from any 6, 12, 24 or 32-volt DC automotive or auxiliary battery system, it can be used for operation of davits, anchor handling, hauling of fishing lines, winching and pulling traps. It is available with swing boom for permanent dockside installation.

The Tiger winch has 225' drum capacity and will lift up to 3000 lbs. with multiple lines, 1000 lbs. with single line. It operates from convenient 10' remote control for safe one-man operation. It has die cast iron alloy construction with completely enclosed high carbon steel gear and chain drive.

Pringle Heads Chrysler Marine Engine

W. L. Pringle

William L. Pringle has been appointed president of Chrysler Corporation's Marine and Industrial Engine Division, succeeding A. S. Hudson, who has resigned. Pringle recently resigned as a director and president of Hercules Motors Corporation to accept the position. Pringle will be located at the division's main office at 12200 East Jefferson Ave., Detroit, Mich. He has had 22 years of experience in the engineering and sale of industrial products to American industries.

Twin Disc Marine Gear Folder Issued

A six-page folder (Bulletin 319), giving comprehensive data about Twin Disc Clutch Co. marine gears has been issued by the Racine, Wis., firm.

The fully illustrated folder contains information on Twin Disc engineering and production facilities, one of the largest in the marine gear manufacturing industry, as well as quality control and testing procedures. Features common to all Twin Disc Marine Gears are covered at length. There is also a section devoted to Twin Disc's extensive parts and service facilities.

Hawker Siddeley Expands

Hawker Siddeley has announced the expansion of its American company. The Group's industrial products previously sold through Orenda Industrial Inc., a member of the Group's Canadian organization. A. V. Roe (Canada) Ltd., will in the future be marketed through Hawker Siddeley Brush Inc., from their offices and warehouse at 34-14 58th St., Woodside 77, L. I., N. Y. The new company is a member of the Hawker Siddeley Group and has representatives in San Francisco and Chicago.

The small engine division will maintain and strengthen its distributor and dealer organization and extend its range of locally assembled products. The President of the new company is M. C. Clear, who is the Managing Director of Hawker Siddeley Brush International Ltd., and Vice-President is J. P. Bond, previously a vice-president of Orenda Industrial Inc.

Allied Diesel Distributing Flagship Engines

Allied Diesel Sales & Service, Inc., 332 Congress St., Boston, Mass. has been appointed distributor for Flagship marine engines in Massachusetts, Rhode Island, New Hampshire and part of Connecticut. The Flagship line of V-8 engines comprises 145, 185 and 200 hp. models.

Also handled by Allied Diesel are Allis-Chalmers, American Marc, Lister and Mercedes-Benz Diesels. Service facilities and parts are provided for each line.

Goff Has New Providence Quarters

L. M. Goff Co. has moved to new, larger quarters at 132 Wickenden St., Providence 3, Rhode Island. Conveniently located, with parking space, the building contains show room, repair shop and stock department.

Established in 1955, the business is headed by Luther Goff, and Lloyd Patterson is service manager. The firm specializes in marine engines and accessories, serving the Southern New England territory of Rhode Island, Connecticut and Massachusetts.

Among the lines handled by Goff are Barr Marine Diesels, conversions and replacement manifolds; B&W Lathrop gasoline engines; Red Wing Diesel and gasoline engines; Atlantis V-8 marine engines; and Mercury outboard motors. Accessory items and marine supplies include Sen-Dure heat exchangers, Aeroquip hose, AC spark plugs, Cole-Hersee switches, Blue Streak ignition parts, Exide batteries, Walter keel coolers and V-drives, and International paint.

New L. M. Goff Co. show room and repair shop at Providence, R. I.

New Johnson Model Has Automatic Choke

A 75 hp. Super Sea-Horse paces Johnson Motors step-up in power for 1960, which also introduces a new 40 hp. model. The Waukegan, Ill., firm's V-75, incorporates power with automatic choke, high speed gear case, and a selection of propellers. The 75 hp. model is available with electric starting only.

The V-75 shows practically no weight changes from the V-50. Piston displacement has been increased from 70.7 cubic inches to 89.5 inches, but the stroke remains 2½ inches to deliver 75 hp. at 4,500 rpm.

Upping the 35 Sea-Horse to deliver 40 hp. at 4,500 rpm. meant expanding its piston displacement from 40½ to 43.9 cubic inches. The bore was increased from 3 1/16 to 3 3/16 inches. The 2¾ inch stroke was unchanged.

The automatic choke makes its debut with the 1960 models. Attached directly to the carburetor, it has a special water jacket housing which communicates the slightest change in engine temperature. The choke works automatically because of an element made from leaves of two metals.

One metal responds to temperature changes more rapidly than the other, causing the assembly to move in the desired direction. The bi-metallic element regulates the degree of choking, depending on the heat of the engine block. The choke closes each time the engine is stopped. It may also be operated by hand.

A high-speed gear case designed to cut the water with less drag and more speed has been added to the Super Sea-Horse V-75. This was accomplished by lowering the number of teeth on the propeller shaft gear, permitting use of a smaller gear housing. The powerhead continues to turn up between 4,000 and 5,000 rpm., but the propeller turns much faster.

With the new lower unit goes a selection of three propellers. Each motor will be shipped with a 10 x 11 propeller for average usage. A higher speed 10 x 12 propeller is available for light fast boats, and a 10¼ x 10 is ready for large, heavy boats.

Barr 1960 Chrysler Conversion Kits

Barr Marine Products Co., 2700 East Castor Ave., Philadelphia 34, Pa. has made available a marine conversion kit for the 1960 Imperial and Chrysler Windsor, Saratoga and New Yorker engines up to 350 hp. The conversion parts are available as a complete "bolt-on" kit or individual components.

Warner "Velvet Drive" hydraulic type reverse and reduction gears in ratios up to 3:1 are available. Opposite rotation at 2:1 reduction can be supplied for twin screw installations. The transmission and conversion kits, which are also available for DeSoto, Dodge and Plymouth V-8 engines, include necessary flywheel housing, shaft coupling, oil cooler and lines, thus providing for a complete installation. Front engine supports are steel, and rear supports are an integral part of the flywheel housing.

A dividing wall within the water jacket permits water to flow the full length of the manifold, pre-heating the water before entering the cylinder block. Water lines between manifold and block are rubber, with copper and brass fittings and stainless steel clamps.

A Jabsco ball-bearing-equipped rubber impeller pump provides sea water cooling, and fresh water cooling is available with the use of heat exchangers. Also featured is a U.S. Coast Guard-approved flame arrestor.

Graymarine Engine Maintenance Film

A 16 mm, color motion picture film covering maintenance operations on gasoline engines made by Gray Marine Motor Co., 710 Canton Ave., Detroit, Mich., is now available for free lending to interested groups. Photographed in the Gray test fleet, the film covers all routine maintenance operations and adjustments, including timing of the Fireball V-8 engines with stroboscope light, and also items such as carburetor and reverse gear adjustments on Gray 4 and 6-cylinder engines. A narrator explains each operation in detail.

Elisha Webb Headquarters Renovated

Elisha Webb & Son Co., 136 South Front St., Philadelphia, Pa. have completed renovation of their store and office which were extensively damaged by fire in adjoining property last Fall. They have replaced their complete stock of deck, engine and steward supplies, as well as boat equipment.

J. Hampton Webb is president and is the third generation of Webbs to head the business, which was established in 1894 and incorporated in 1906.

The firm manufactures Webbperfection galley ranges in a separate plant which has been located in the Kensington section of Philadelphia since 1917. A new smaller range, Model 114, was introduced recently. The stove is 30" high, its top is 24" wide and 21" deep, the oven is 12" x 15" x 12" and it uses a Deluxe oil burner. The Webbperfection all-steel ranges are designed for all types of fuel, and are available in several sizes from 2 to 12 ft. in length. Twelve models have Valjean burners, 10 have Deluxe and 9 have Ray burners.

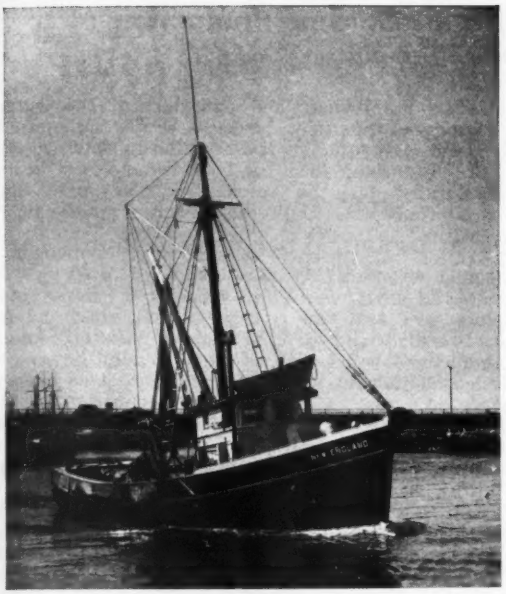
Bay State Marine Opens New Store

A new 2-floor store with display room has been opened by Bay State Marine & Equipment Co. at 255 Northern Ave., Boston, Mass. Established two years ago by Frank J. Strazzere, the firm handles marine engines and accessories, with engine parts being a specialty.

Prior to going into his present business, Strazzere was a commercial fisherman for 20 years, and currently is part owner of the Boston dragger *Mary & Joan*. The stock man at Bay State Marine is Anthony Maniscalco, while Edward M. Kane is chief buyer. A four-floor warehouse at South Boston is utilized by the firm for carrying its inventory.

In addition to main and auxiliary Diesel and gasoline engines and parts, Bay State Marine carries 1/3 to 30 hp. motors and 2 to 40 kw. DC marine generators, filters and filtering systems, rings, fuel injectors, water and exhaust manifolds, 1" and 2" hose with couplers in 30 to 50 ft. stock lengths and custom lengths for wash down and engine connections, bronze, Monel and steel propeller shafts and 20" to 90" diameter propellers.

New headquarters of Bay State Marine & Equipment Co., Boston, Mass.



2000 + service hours . . . not a penny for repairs

The "New England", a 61 ft. dragger has been Cat-powered since it first went into the water in 1946. Here are the words of Capt. Alfredo G. Rebello, "Cat Engines are the best I've ever had. I've never spent a penny for repairs on my present Cat. Furthermore, over the years I've owned 6 Caterpillar Engines. They're economical, have plenty of power, and good towing speed." And they're all backed by H. O. Penn Machinery Co., parts and service facilities *plus our reputation.*"

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

H. O. PENN MACHINERY CO., INCORPORATED

140th Street and East River, New York 54, N. Y. — Phone: CYpress 2-4800
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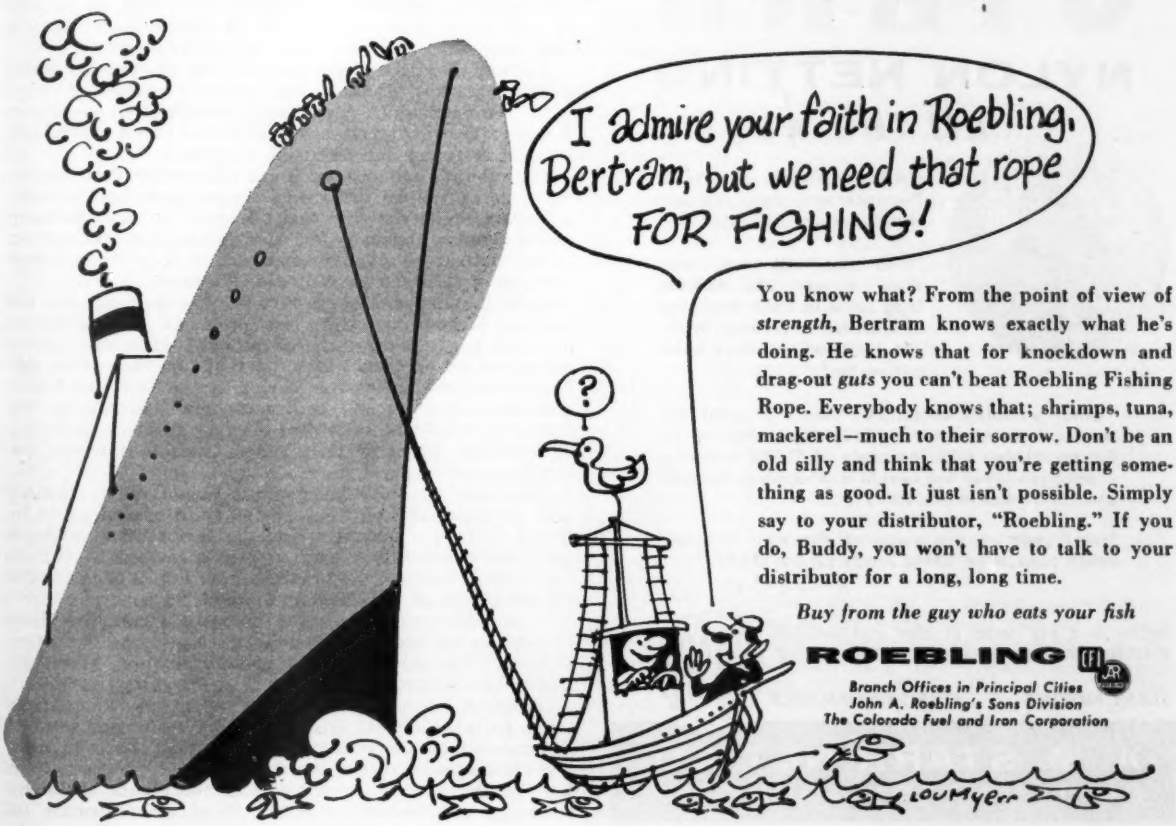
CATERPILLAR
sales • parts • service



You know what? From the point of view of *strength*, Bertram knows exactly what he's doing. He knows that for knockdown and drag-out *guts* you can't beat Roebling Fishing Rope. Everybody knows that; shrimps, tuna, mackerel—much to their sorrow. Don't be an old silly and think that you're getting something as good. It just isn't possible. Simply say to your distributor, "Roebling." If you do, Buddy, you won't have to talk to your distributor for a long, long time.

Buy from the guy who eats your fish

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

1959 NEW ENGLAND

BOAT: Tuna Seiner SILVER MINK

CATCH: 1,700,000 lbs. of Blue Fin — within 2 months!

REMARKS
STARR NYLON NETTING praised by Skipper

1960
MORE TUNA WITH

STARR
NYLON NETTING
all the way!

CAPT. MANUEL PHILLIPS
Provincetown, Mass., owner-skipper, reports the facts:

"850 tons with *only one-third* of our 325 fathom long seine in 1959 made up of Starr Nylon Netting. Without Starr we wouldn't have gotten half . . .

"Other webbing continually tore . . . and we were ashore as many as four days repairing it. But no trouble with the piece of STARR webbing — not even when we caught a whopping 260,000 pounds of tuna in one set . . .

"Next year we are going *all the way* with our entire tuna seine being made up by STARR."

Another in a new series of Starr advertisements direct from the fishermen using Starr Nylon Netting.

STARR NETTING . . . STAR PERFORMANCE

STARR NETS

A. M. STARR NET CO.
EAST HAMPTON, CONN., U.S.A.

California Sardine Production

(Continued from page 10)

Meanwhile the owners and operators of the fishing fleets supplying the three ports were developing new methods and techniques in the catching and delivery of their fish. Until about 1925, the most common device for catching sardines was the lampara net. The purse seine net was introduced into the industry in the middle 1920's in San Pedro.

The average nightly catch of a crew of 12 men on a purse seiner was 75 to 100 tons, compared to 40 tons on a lampara. As years went on, the size of the purse seine boats increased until the average vessel could deliver 150 tons in a night and travel at a speed of 10 to 12 knots.

The industry now began to realize its possibilities and to flex its muscles. Competition for markets became keener. The price of a case of 48 ovals had declined from $12 in 1918 to $6 in 1925. The price of raw fish remained in the neighborhood of $10 per ton.

Poultry producers and cattle raisers found that sardine meal with a protein content of 63 to 70 percent made a better feed mix than meat scrap from packing houses. The price decline of the canned product was further offset by the revenue from the sardine oil and meal. But it was illegal to manufacture oil and meal from the whole fish—only the offal could be used.

Oil and Meal Necessary to Industry

In 1927 the price of a case of ovals had declined to $3 and it was recognized that the production of oil and meal was necessary to keep the industry alive. The Legislature passed a law permitting the use in reduction plants of 25 percent of the catch of sardines. A few years later, after a number of prosecutions to enforce the law, this percentage was increased to 32½ percent. By this time, the production of sardine meal and oil was recognized as an equal, if not the dominant, factor in the industry.

Consider the anomaly of the situation—a canner put 67½ percent of his raw material into cans to be sold at cost or less than cost in order to reduce the remaining 32½ percent to oil and meal and make a profit.

A group of independent fishermen, in an effort to create a larger market for their fish, outfitted a seagoing vessel with reduction machinery and commenced operations outside the territorial waters, where they could use their entire catch for reduction purposes.

The operator of a shore plant discovered that sardine oil could be refined into an edible product. Another produced affidavits showing that the meal he manufactured was shipped to Germany and used as a flour supplement in bread. Both were given special permits to use a specified tonnage of sardines for reduction purposes.

With the depression of 1929-33, the demand for the canned article declined. The price to the fishermen declined to $3.25 per ton. As the demand in the United States for oil and meal was constant, the State Fish and Game Commission was convinced by packers and fishermen that employment both on shore and among the fishermen would be improved if every cannery operating a reduction plant were given a specific tonnage for straight reduction.

Five or six additional floating plants were outfitted and operated off Point Reyes. No valid reason could be found to deny a permit to independent reduction plants (not connected with a cannery). The seasons of 1935-36 and 1936-37 marked the greatest recorded catches—in the neighborhood of 700,000 tons for each season.

In an effort to protect the breeding stock, the State enacted laws which outlawed the high seas reduction industry. The tonnage allotted to reduction plants on shore was reduced.

However, no effort was made to curtail the tonnage taken for canning. Of this tonnage, 32½ percent went to the cannery-owned reduction plants, plus the offal from the canning operations, which amounted to one-half of the remaining 67½ percent. About 100 plants, including canneries and reduction plants, 30 of which sprang up

A Huge Stock of New, Unused ENGINES, PARTS, and MARINE ACCESSORIES

In Our New Store and Warehouse Headquarters at Boston Fish Pier

LOW PRICES • PROMPT SHIPMENT

A Few of Our Many Outstanding Bargains for this month:

DC lighting plants with Waukesha gasoline engine and 5 kw. generator, skid mounted, unused gov't. surplus, $395.

6-71 Graymarine complete engines, new and used, from $1000 up.

Complete Lister-Blackstone auxiliary units, 5 kw. generator, 8 hp. Lister, gov't. surplus unused, $795.

Surplus Model 268A G-M, 8-in-line, complete with 2:1 reduction gear and all controls, $7500.

New DA Buda 4 cyl., 25-40 hp., $695 complete.

Special this month only—DHM1558, 11½ x 15 brand new 300 hp., 325 rpm. Atlas complete, $13,800 delivered f.o.b. Boston.

Electrical steering gear—Webster Brinckley, 2 hp. motor on 115-volt DC. Complete with gear box, pedestal steering stand, $1295.

Maxim silencers from 14 to 75" long.

Hobart electric welders, unused gov't. surplus, complete with welder and motor, $395.

BAY STATE MARINE & EQUIPMENT CO.

Edward M. Kane — **Frank J. Strazzere**

"All Parts for Some Engines—Some Parts For All Engines—Diesel & Gas"

255 Northern Ave. — **BOSTON 10, MASS.** — **Tel. Hancock 6-8927**

on San Francisco Bay, were in operation during the late 1930's.

Because of their habits and behavior, these fish are particularly vulnerable to predatory fish and fishermen, and conservation is particularly difficult. Nature intended the species as food for the larger fish of the Pacific.

From the time the egg is spawned, the larvae, the small fish, the fingerling and the adult fish provide food for any and all predators large enough to eat them.

A female sardine spawns about 100,000 eggs during the spawning season. If two of these progeny live to maturity and spawn, the population of the species remains constant.

To have a successful spawning season, i.e., four or five progeny living to spawning age, a number of things must happen at just the right time. The surface temperature of the ocean in the spawning area must be just right—variation of a few degrees either way can be disastrous. The same is true of subsurface temperature.

Adverse winds or storms can cause serious results. An adequate food supply must be available for the larvae and the young fish. This is supplied by the upwelling of the ocean along the coast, bringing the nutrient content of the ocean from the bottom to the surface where it is available. This upwelling is caused by the pressure of the prevailing westerlies.

In 1939, Scripps Institution of Oceanography and the U. S. Fish & Wildlife Service did some offshore work and discovered eggs all along the Pacific Coast as far north as the Washington coast. This year's class supplied a large percentage of the sardines caught during the 1940's

By 1945, it was evident from the catches, the distance the boats were required to go for fish and the large percentage of young fish in the catches that the sardine population had declined to a serious extent.

Early in 1947 two important developments occurred. The first was a conference of representatives of the California Academy of Sciences, the California Fish and Game Commission, Scripps Institution of Oceanography, and the U. S. Fish & Wildlife Service, at which a document was drafted which outlined a plan of investigation of the sardines.

Marine Research Committee Formed

About the same time, the trade associations representing the entire sardine industry requested the legislature to enact a law creating the Marine Research Committee and allowing them to tax the industry on a tonnage basis for all sardines taken for canning or reduction. A few years later the committee was authorized to levy the same tax on anchovies, mackerel and squid.

At its second meeting, the Marine Research Committee adopted the plan mentioned above and an agreement was reached between the above named agencies and the committee designating the parts of the program assigned to each, and appropriations were made by the committee to the agencies.

The money appropriated by the Marine Research Committee was used to supplement the income they received. A few years later, Stanford's Hopkins Marine Station at Pacific Grove was invited to join the program.

Research vessels belonging to four of these agencies operate throughout the year over an area of the Pacific Ocean from the Oregon border to Cape San Lucas, and from the coast to several hundred miles at sea, and in the Gulf of Lower California.

Monthly records of conditions at stations ranging from 20 to 50 miles apart are kept. These records include temperatures at various depths, records of salinity, oxygen and other chemical contents of the sea water. Special nets are towed to determine the plankton content of the water.

From 1949 to 1956 the results of these investigations were monotonously the same. The catch of sardines continued to be small. Then came the year of 1957 with warm water, new spawning areas and the increase in California's sardine catches.

Herring Catches Lead Lakes Production

Of the several species of commercial fish taken from the Great Lakes currently, lake herring was in better production than any of the other varieties. Minnesota commercial herring netters were shipping greater quantities than both Michigan and Wisconsin commercial producers. Minnesota fishermen were fishing mostly within the 50 mile radius of Minnesota ports.

Catches of lake trout by Lake Superior commercial fishermen with gill nets in open water was generally light. However, several good commercial shipments to metropolitan markets have been made despite the frigid weather which makes setting and raising of nets difficult. Whitefish yields were generally higher than lake trout yields. with Michigan producers reportedly getting the better catches.

In the Bays De Noc areas of Green Bay of Lake Michigan, commercial fishing has been light with the ice now getting sufficiently thick to operate through it. In the lower bay some carp, perch sheephead, etc., were being taken but most of these catches were relatively light. Some perch were being taken by Milwaukee fishermen whose catches of lake chub were generally light.

In the southern area of Lake Michigan both perch and chub takes were comparatively greater than in the northern region of the lake. Fairly good quantities of chub were being produced by netters operating along the eastern shore.

From Saginaw Bay of Lake Huron, chub catches were fairly good and herring takes were ranging from better to a tapering off level. Ice on the bay is thickening, and during February and March commercial fishermen are expected to set up ice fishing operations. Reports from the northern section of Lake Huron indicate that commercial fishing, generally, has been light.

From Lake Erie, Ohio commercial fishermen were producing fairly good quantities of perch in trap nets. Catches of sheephead, bullheads, etc. were light. Pennsylvania and New York Lake Erie commercial fish producers were reportedly getting light commercial catches.

River commercial fishermen, operating on the Illinois, Mississippi and Wisconsin rivers were reportedly getting good commercial quantities of buffalofish.

Trout Population Increase Depends on Hatcheries

With a sharp decline in sea lamprey population in Lake Superior indicating a possible turning point in the battle against the parasite, hopes of a speedy restoration of the lake trout population in the Great Lakes rests upon the trout egg production in hatcheries, according to Wisconsin fisheries experts.

In Wisconsin, Green Lake produced 380,000 trout eggs in 1959, compared with 125,000 in the previous year. Richard Harris, Oshkosh, area supervisor for the State Conservation Department, said he thought Green Lake could be good for one million eggs annually with intensive spawn fishing.

Wisconsin plans to send 20,000 Green Lake trout eggs to Michigan, which wants to establish a brood stock of the Lake Superior strain raised in Green Lake. In turn, Michigan had a brood stock which pushed its 1959 egg harvest to 1,383,000 and sent 200,000 eggs to Wisconsin's Bayfield hatchery.

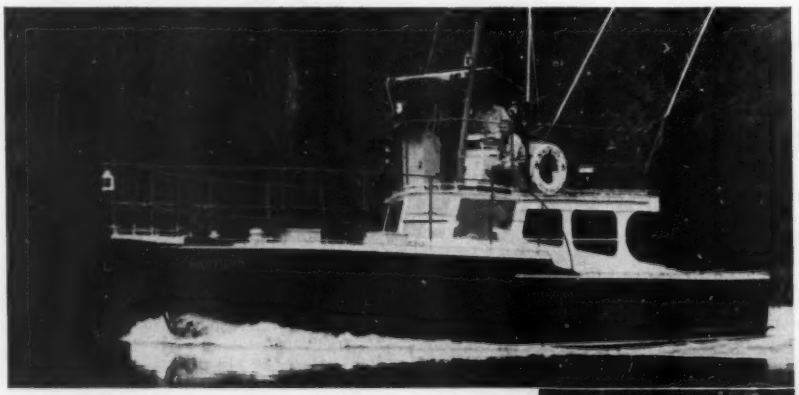
Wisconsin also expects to obtain fry from the federal hatchery at Manchester, Iowa, in March, some of which will be placed in a tank at a new state hatchery at St. Croix Falls for test purposes. The new St. Croix unit will have 28 more tanks by next spring, and will then help produce stock for the Great Lakes. A federal hatchery is also planned on Michigan's Jordan River, to produce two million yearlings a year by 1962.

Wisconsin fisheries men said that a test planting of 35,000 yearling trout over the Sheboygan reef on Lake Michigan would help to determine how far in advance of lamprey control lake trout stocking may begin. The fisheries men noted that on the basis of present information, young lake trout have been unmolested by lampreys until they are three or four years old.

Eliminating Undesirable Fish May be Unwise

Placing too much stock in the development of selective toxicants to destroy certain fish considered undesirable, such as carp, might be a step toward unwise management, in the opinion of Prof. Arthur D. Hasler, director of the hydrological laboratory at the University of Wisconsin.

Instead of eliminating such fish species, Hasler advocates control with improved existing methods, and conservation of the fish until such time they are no longer considered undesirable and may even be needed. "When a farmer raises too much of one thing, he doesn't destroy the crop," Hasler said. "He does his best to harvest it and put it to good use.



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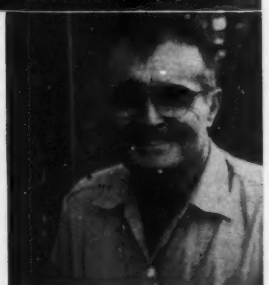

CAPTAIN ART BERRY, Baton Rouge, La., owner and builder of the 40-ft. charter boat "Nautilus."

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Stern Trawling Operation

(Continued from page 9)

The work of the crew under conditions of increased safety improves and the trawl is handled more rapidly, thereby increasing output with a reduction in the number of crew.

The objectives of the designers were to increase speed of bringing the trawl on board; to reduce damage to the trawl; to ensure that the quality of the catch was not impaired and to improve the working conditions of the crew. All this is available in a hull form which has distinct advantages over other stern fishing trawlers with ramps.

It should be noted that these objectives have been reached by maintaining a normal form aft; by the vertical lift to the trawl and by the arrangements for getting the catch down to the working 'tweendecks. It is the result of close cooperation between the naval architect; the engineering specialist and the practical fisherman.

Stern Trawler Without a Ramp

The stern trawler was developed in fair weather regions, such as the Pacific Coast and in the Mediterranean, and has only come into use as a long distance trawler in recent years. In order to utilize drifters, seiners, longliners, tuna clippers and, possibly, trollers, throughout the year, it was necessary to equip them for an alternative fishing method, such as trawling. And as the other fishing gear—with the exception of drifts nets—was handled over the stern, it followed that the trawl was also handled over the stern. The gallows were symmetrically arranged at the sides near the stern. A stern-roller is often used for shooting and hauling the trawl, but the catch is also sometimes hauled over the side as the existing derrick can best be used as the "codend derrick", while the heavy tackle at the mast serves as the "fish tackle".

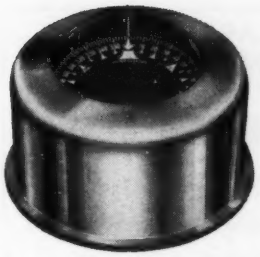
The deck equipment of these vessels varies, often depending on the original fishing method, and even the most modern combined types of such vessels remain typical of their original character. The vessels have two movable side-gallows, either reversed U-shaped or davit, situated approximately 10 to 16 ft. forward of the broad stern, or often a transom stern. This latter is best for the large net roller and it provides a good working space for shooting and hauling the nets.

The vessels have a mast, aft of the deckhouse, with a large derrick to serve the hold and fishing gear hatches and the aft working place. A heavier tackle for hoisting the codend over the side is often attached to the middle of the large derrick. There may be another small derrick at the mast for this purpose and also for hoisting the lifeboat or outriggers.

There are various arrangements of the winch and the fairlead bollards, differing in types and sizes from the small shallow-water winch with a twin drum, transversely set, to the deep-sea winch with two separated drums placed in a longitudinal direction. The fairlead bollards are arranged according to the working direction, so that there are either center bollards between the gallows or two wing bollards. Modern winch drums are aligned towards the gallows by using a cardan shaft, or rotatable davit-gallows are fitted. Vessels with larger trawl winches working in a longitudinal direction sometimes also have a small seine-double-capstan or two additional drums, which may be advantageous for pelagic fishing.

This type of vessel is very profitable in fair weather areas, as it can be adjusted to the best fishing method for existing conditions. With the addition of a trawl, such a vessel is capable of working throughout the year. As it costs relatively little to build and operate, this type of vessel has a great future in fisheries where favorable weather prevails.

The idea of processing fish on board to facilitate voyages to remote fishing grounds has led to this type. The



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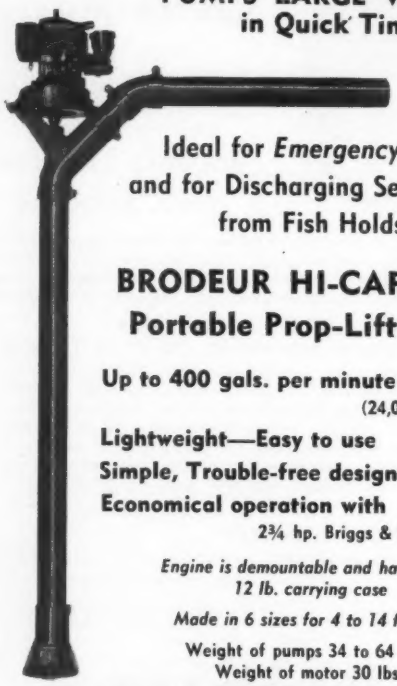

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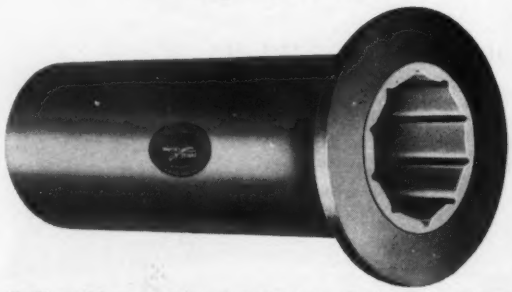

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processing machinery required a large space, and a shelter deck was the obvious place for it. The beam wind position on the side trawler when handling the trawl was very inconvenient. The height of the shelter deck made the handling of the trawl difficult, and heavy rolling had to be avoided because of its effects on the power machinery and conveyor belts.

Stern Trawler with a Ramp

The answer to these problems was to operate over a stern which, as was soon proved, does not impair the quality of the fish.

At first, there were some difficulties in handling the trawl over the stern. Additional sweepline-gilsons were used in the British stern trawlers. These drew the sweeplines from the trawl-doors to the ramp, simultaneously slacking the warps. The arrangement of the trawl winch fairlead bollards and gallows has a slight resemblance to that of the smaller stern trawlers without a ramp.

A different arrangement was used on German built vessels. The large factory trawlers used warp roller trollies running on rails along the stern ramp which, although expensive, can be handled quickly. This arrangement has been given up in new Russian vessels where use is made of two conventional gallows aft on each side of the deck.

A relatively simple solution was found for trawlers of conventional size and without a raised upper deck. Gallows based on the gallow-sheave principle were installed near the stern, turned aft, beside the ramp. The transom surfaces were bent inward to guide the otter boards to the stern with guide bars. Cross-head bows on the gallows heads assured a firm three-point position of the otter boards flush with the transom.

Two rail rollers prevented the warps touching the bulwark when hoisting. An alternative version of this system, which was adopted by one German company, consists of a single portal-shaped gallows which extends over the whole width of the vessel. The traverse part of it allows for a transverse shifting of the warp-sheaves during operation. When separable warps or special sweepline-gilsons, and slightly elongated back strops adjusted to the ramp and pennants, are used, the net can be handled over the stern without transverse or longitudinal movable warp-sheaves.

Another typical deck arrangement in these large stern trawlers is a hoisting post with the tackle for hoisting the gear arranged in the main direction towards the ramp. This arrangement allows the wet net, with the exception of the full codend, to be kept clear of the ramp and thus reduces friction.

A long central part of the ramp, in the hauling direction, is specially useful for this purpose. Other equipment includes a codend derrick at the portal-gallows for lowering the codend; a bipod over the loading hatch, designed to allow the codend to be emptied without being lifted; coamings and bobbin tracks along the deck for safety with the vessel rolls, two short lifting lines which make it easy to fasten the warps to the otter boards, and two verring lines for the heavy bobbin wire.

With this method of handling the gear, the flush fish hatch with a chute leading into the large buffer store should be located just in front of the ramp. By unloading the catch from the codend immediately below deck the pens can be installed 'tweendeck in front of the gutting places.

Advantages of Stern Trawlers

The cost of building such a stern trawler is about 10 to 15 per cent higher than that of a comparable side-trawler, but the stern trawler can fish longer, which might result in better annual returns.

Crews quickly adapt themselves to the stern trawler and its deck equipment, and the better working conditions are appreciated. One advantage of the stern trawler is longer fishing time because there is: no heaving at sea; generally free choice of the direction of hauling, inde-

pendent of the current and winds—a special advantage when fishing on steep banks; less winch power in hauling, as the warp-pull acts in a straight line to the wind; no necessity to split the contents of the codend, which is "tilted", not lifted, and poured out.

A second advantage is more careful handling of the catch by: smooth codend unloading to the gutting deck immediately after hauling; and use of processing and stowing conveyor-belts, thus reducing fish handling to a minimum.

More careful handling of the fishing gear is made possible by better guiding of lines; few changes in the direction of pull; avoiding uneven load on the warps; and keeping the warps clear of the ship's hull.

Fourth, better working conditions for the crew enable saving the long, dangerous and heavy work in hauling the net; reducing the work of handling; having the ramp deck—especially the net winch—protected by the superstructure; and the working deck being completely enclosed.

Adverse weather effects may be reduced by: the linear direction of hauling; the net being handled only by the winch; having the ramp deck and the winch protected; and the working deck being completely protected.

Trouble-Shooting Ignition Systems

(Continued from page 11)

high voltage is impressed suddenly across it and full voltage is delivered to the spark plug's firing ends.

On conventional plugs without this auxiliary gap, oil and carbon deposits may bleed away voltage almost as fast as it is built up in the coil. As a result, a spark is unable to form at the electrodes when the deposits become too prevalent. Due to their excellent performance characteristics, auxiliary gap plugs have been specified as original equipment by many major marine engine manufacturers.

Oily deposits on the spark plug's firing end result when an excessive amount of oil enters the combustion chamber. On engines equipped with crankcase ventilator outlet pipes, oil is sometimes permitted to enter the combustion chamber where the pipe is bent so it comes in contact with the flame arrestor, causing oil to be sucked into the carburetor. However, the most common causes of this condition are worn cylinders and pistons, or valve guide troubles. While "hotter" spark plugs may reduce these deposits temporarily, complete engine overhaul may be required to restore satisfactory engine performance.

Causes of Overheating

Another condition which can be determined easily by examining the spark plug is engine overheating, providing the spark plug is of the proper heat range. If on examination plugs have blistered insulator noses, and badly worn electrodes, a check should be made for clogged water-cooled exhaust manifold passages, or excessive combustion chamber deposits. If only a few plugs are overheated, a leak in the intake manifold may be responsible for the trouble. Improper spark timing, low octane fuel, sustained periods of high speed engine operation, or a propeller which is mis-matched to an engine, also may cause overheating.

When selecting spark plugs, always match the plugs to the engine's operating characteristics. For example, where engines idle for long periods of time, or are subjected to continuous trolling operation, fouling due to oil and carbon deposits may be encountered when using plugs of the specified heat range. If this happens plugs of a slightly hotter heat range may be installed.

In addition to those mentioned above, there are many other conditions which can affect ignition system performance in marine engines. Such factors as compression ratio, coil condition, condenser, distributor cam, and distributor shaft condition all bear heavily on the manner in which an engine performs. Malfunction in these areas only should be handled by a qualified ignition expert who is equipped to service these components.

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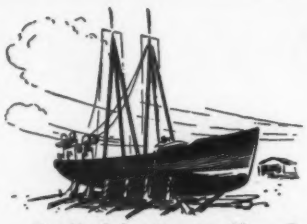

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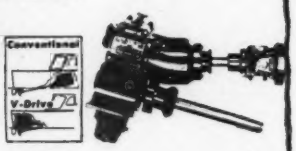

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Agatha & Patricia (2)	77,000	Mary Rose (2)	72,2
Arlington (3)	228,000	M. C. Ballard (2)	112,9
		Medan (2)	85,3
Baby Rose (1)	55,000	Michigan (3)	181,6
Blue Waters (1)	29,300	Minnie (2)	161,5
Bonaventure (2)	65,900	Mother Frances (2)	58,8
Bonnie (3)	218,500		
Buzz & Billy (2)	55,100	Nautilus (2)	36 0
		Nellie P. (1)	2,9
Cambridge (2)	154,800	New Star (2)	131,5
Caracara (2)	66,100		
Carmen & Vince (2)	72,600	Ohio (2)	66,2
Charlotte M. (3)	124,100	Olympia La Rosa (2)	38,7
Clipper (2)	37,300		
Columbia (2)	74,000	Pam Ann (2)	66,6
Comet (2)	106,600	Patty Jean (2)	164,2
		Phantom (2)	155,0
Dolphin (2)	50,300	Philip & Grace (1)	49,0
Doris F. Amero (1)	23,100	Pilgrim (3)	105,9
		Plymouth (2)	108,5
Eagle (2)	87,300		
Emily H. Brown (2)	74,900	Racer (2)	160,4
Ethelena (2)	54,200	Red Jacket (2)	159,4
		Rosa B. (2)	128,6
Flying Cloud (3)	302,800		
Four (2)	70,300	St. Angelo (3)	56,2
		St. Joseph (3)	124,7
Grace & Salvatore (2)	79,100	St. Marco (1)	31,2
		St. Mary (1)	33,5
Hazel B. (2)	75,200	St. Nicholas (1)	33,0
Heroic (1)	77,600	St. Victoria (2)	77,0
Holy Family (2)	67,900	Sebastiana C. (1)	20,0
		Swallow (1)	53,4
Jane B. (1)	37,700		
J. B. Junior (2)	106,600	Terra Nova (2)	128,9
Jeanne D'Arc (1)	24,700	Texas (2)	89,0
Joseph & Lucia (2)	86,300	Thomas Whalen (2)	84,9
Josephine P. II (2)	25,200		
		Villanova (2)	43,9
Katie D. (1)	41,300	Vincie N.	18,5
		Weymouth (2)	100,0
Lady of the Rosary (2)	85,900	Wild Duck (1)	29,6
		Wm. J. O'Brien (2)	121,5
Magellan (2)	41,000	Winchester (3)	221,3
Manuel F. Roderick (1)	43,100		

PORTLAND (Me.)

Alice M. Doughty II (5)	63,500	Mary & Jennie (1)	3,6
Andarte (5)	130,000	Ocean Life (1)	240,0
Bois Bubert (1)	1,300	Quincy (1)	122,0
Dorchester (4)	179,500	St. George (2)	304,0
Dorothy & Ethel (3)	21,000	Theresa R. (3)	127,0
Elinor & Jean (5)	61,500	Vagabond (2)	35,0
Gulf Stream (3)	125,000	Vandai (4)	113,0
Kennebec (4)	89,000	Winthrop (2)	93,0
Mary & Helen (1)	1,600		

Scallop Landings (Lbs.)

Francis L. MacPherson (2)	25,000	Sylvester F. Whalen (1)	13,0

NEW YORK

Andrea G. (3)	123,800	Joseph S. Mattos (4)	129,5
Austin W. (3)	52,300	Katie D. (1)	15,5
Carol-Jack (4)	181,500	Lady of Good Voyage (3)	112,3
Edith L. Boudreau (4)	156,800	Manuel P. Domingoes (3)	83,0
Evelina M. Goulart (3)	116,300	Sandra & Jean (3)	61,0
Felicia (2)	63,200	Santa Maria (1)	45,0
Golden Eagle (3)	144,800	Tina B. (2)	85,1
J.B.N. (3)	67,600	Wild Duck (2)	60,0

Scallop Landings (Lbs.)

Beatrice & Ida (2)	22,000	Matador (1)	11,0
David A. (1)	11,000	Norseman (2)	22,0
Enterprise (2)	22,000	Ruth-Moses (1)	11,0
Maridor (1)	11,000		

ROCKLAND (Me.)

Araho (2)	129,000	Ocean (1)	300,0
Brighton (2)	158,000	Squall (1)	290,0
Elin B. (3)	27,500	Storm (1)	200,0
Flo (2)	17,500	Surf (1)	300,0
Helen Mae II (4)	23,000	Tide (1)	280,0
John J. Nagle (3)	176,000	Wave (1)	200,0
Little Growler (1)	16,000		

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Pocahontas (1)	11,000		

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Adventure (2)	20,000	Major J. Casey (2)	16,500
Althea (3)	29,700	Marie & Katherine (2)	25,600
Anastasia E. (3)	33,500	Martha E. Murley (3)	26,700
Annie Louise (3)	34,800	Mary & Gloria (1)	5,500
Annie M. Jackson (3)	26,500	Mary E. D'Eon (2)	17,500
		Mary J. Landry (3)	31,300
Barbara M. (2)	16,700	Mary Tapper (3)	60,600
Brant (2)	20,200	Midway (2)	31,500
		Miriam A. (2)	36,500
Cap'n Bill II (3)	50,400	Moly & Jane (3)	35,000
Capt. Deebold (2)	30,000		
Carl Henry (2)	45,400	Nancy L. (1)	6,000
Catherine & Mary (2)	45,200	New England (1)	13,000
Charles E. Beckman (2)	17,700	North Sea (3)	35,000
Christina J. (2)	44,700		
Christine & Dan (2)	17,500	Pauline H. (3)	123,300
Comber (2)	19,900	Phyllis J. (2)	15,500
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Falcon (3)	49,900	Robert Joseph (2)	33,700
Friendship (3)	66,200	Roberta Anne (3)	45,500
		Rush (3)	71,600
Gannet (2)	53,000		
Gertrude D. (1)	6,500	Sea Gold (3)	42,000
Glen & Maria (2)	16,800	Sea Ranger (3)	34,600
Growler (2)	27,700	Shannon (2)	24,000
		Sharon Louise (3)	62,200
Harmony (2)	14,300	Shipjack (2)	36,500
Hope II (2)	42,200	Smilyn (3)	46,500
		Solveig J. (2)	56,000
Invader (3)	73,500	Sunbeam (2)	16,300
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Janet & Jean (3)	34,200		
Joan & Ursula (3)	73,400	Teresa & Jean (2)	54,000
John G. Murley (2)	64,500		
Julia DaCruz (2)	17,700	Valiant Lady (2)	24,500
		Val T (2)	32,800
Libby (3)	48,200	Venture I (3)	82,300
Little Chief (1)	6,500		
Lorine III (1)	10,000	Whaler (3)	66,000
Louis A. Thebaud (3)	49,000		

Scallop Landings (Lbs.)

Abram H. (2)	8,000		
Aloha (2)	22,400	Laura A. (2)	25,400
Amelia (2)	12,500	Lauren Fay (1)	11,200
		Lillian B. (2)	22,400
Babe Sears (1)	11,200	Linus S. Eldridge (2)	22,400
Baltic (2)	22,400	Lubenray (1)	10,000
Bright Star (2)	22,400		
		Malen & Marie (1)	11,200
Camden (2)	22,400	Mary Ann (2)	22,400
Catherine B. (1)	11,200	Mary J. Hayes (2)	22,400
Catherine C. (1)	11,200		
Charles S. Ashley (1)	11,200	Nancy Jane (1)	8,500
Clipper (1)	10,500	Neptune (2)	23,400
		New Bedford (2)	22,400
Dartmouth (1)	12,200	Newfoundland (1)	11,200
Debbie & Jo-Ann (2)	23,400		
		Ruth Lea (1)	11,000
Edgartown (2)	24,400	Ruth Moses (1)	11,200
Elizabeth N. (2)	23,400		
		Sandra Jane (3)	36,600
Flamingo (1)	11,000	Sippican (3)	36,400
Fleetwing (2)	24,400	Snoopy (2)	24,400
Florence & Lee (3)	35,600	Stanley B. Butler (1)	12,200
Florence B. (2)	25,400	Stanley M. Fisher (2)	22,200
Geraldine (3)	35,600	Tocsin (2)	21,200
Hilda Garston (2)	24,400	Ursula M. Norton (2)	23,400
Ike & Jens (2)	24,400	Villa Riall (2)	22,400
		Vivian Fay (2)	22,400
Josephine & Mary (2)	21,200		
		Whaling City (2)	3,400
Kingfisher (2)	21,200		

GLOUCESTER (Mass.)

Agatha & Patricia (1)	15,000	Olympia (2)	28,000
Baby Rose (1)	40,000	Regina Maria (2)	50,000
Blue Waters (1)	25,000	Rhode Island (3)	30,000
Cigar Joe (2)	18,000	Rosalie S. (3)	17,000
Curlew (2)	296,000	Rose & Lucy (4)	52,500
Flow (1)	234,000	Rosemarie (2)	40,500
Gaetano S. (2)	75,000	Rosie & Grace (1)	12,000
Gloucester (1)	202,000	St. Anna Maria (1)	22,000
Golden Dawn (3)	69,000	St. Cabrini (3)	21,000
Holy Family (1)	60,000	St. Joseph (1)	9,000
Holy Name (1)	9,000	St. Mary (2)	43,000
Ida & Joseph (2)	28,000	St. Nicholas (1)	78,000
Immaculate Conception (1)	5,000	St. Peter (1)	9,000
Jeanne D'Arc (1)	15,000	St. Peter III (4)	65,000
Judith Lee Rose (1)	92,000	St. Rosalie (1)	12,000
Lady of the Rosary (2)	31,000	St. Terese (2)	9,000
Little Flower (3)	38,000	Salvatore & Grace (4)	55,500
Marianna II (1)	12,000	Serafina N. (2)	19,000
Mary Ann (3)	48,000	Serafina II (1)	13 000
Morning Star (1)	5,000	Theresa M. Boudreau (1)	205,000
Natale III (3)	24,000	Villanova (1)	175,000
Ocean Clipper (1)	17,000	Vincie N. (1)	8,000
Ocean Wave (2)	25,000		

WOODS HOLE (Mass.)

Arnold (4)	24,600	Marie & Katherine (1)	7,300
Bernice (1)	3,000	Mary E. D'Eon (2)	18,200
Cap'n Bill III (1)	33,000	Minkette (3)	7,500
Curlew (6)	23,100	Morning Star (3)	2,400
Franora (1)	1,700	Papoose (2)	6,000
Gertrude D. (1)	14,200	Southern Cross (2)	8,700
Madeline (3)	8,700	Three Bells (4)	13,700

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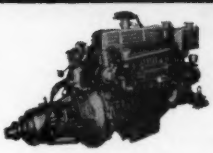
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6-cyl.—96 shaft h.p. @ 2250 r.p.m.
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FULL FORWARD to FULL REVERSE ... *in just 3 Seconds!*
Provides fingertip maneuverability for pleasure craft, fishing boats, harbor craft or work boats with engines up to 300 H.P. at 2200 RPM. Available with reduction gear ratios 1½:1; 2:1; 2½:1; 3:1; 3½:1; 4:1 and 4½:1. Also available as a direct drive reverse gear.
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Reverse and Reduction Gear
Write for new catalog and specify ratio desired.
Specialists in Marine Power Transmission SINCE 1905
CAPITOL GEARS
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Crescent Battery & Light Co., Inc., 819 Magazine St., New Orleans 12, La.
Exide Industrial Division—The Electric Storage Battery Co., P. O. Box 8109, Rising Sun & Adams Aves., Philadelphia 20, Pa.
Mule Battery Mfg. Co., 45 River Ave., Providence 8, R. I.

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COLD STORAGE
Quaker City Cold Storage Co., Philadelphia, Pa.

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Marine Compass Co., Pembroke, Mass.
E. S. Ritchie & Sons Inc., Pembroke, Mass.
Wilfrid O. White & Sons, Inc., 178 Atlantic Ave., Boston 10, Mass.

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Bob Stone Cordage Company, Chariton, Iowa.
Columbian Rope Co., Auburn, N. Y.
The Edwin H. Fitler Co., Philadelphia 24 Pa.
New Bedford Cordage Co., 131 Court St., New Bedford, Mass.

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Bendix Aviation Corp., Pacific Div., 475 Fifth Ave., New York 17, N. Y.
Kelvin & Hughes American Corp., Box 1951, Annapolis, Md.
Wilfrid O. White & Sons., Inc., 178 Atlantic Ave., Boston 10, Mass.

DIESEL TESTING EQUIPMENT
Kiene Diesel Accessories, Inc., 10352 Pacific Ave., Franklin Park, Ill.

ELECTRIC GENERATING PLANTS
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Burmeister & Wain American Corp., Mystic, Conn.
Cummins Engine Co., Columbus, Ind.
Detroit Diesel Engine Div., General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich.
Enterprise Engine & Machinery Co., 18th and Florida Sts., San Francisco 10, Calif.
Ford Marined Engines, Osco Motors Corp., 3627 N. Lawrence St., Philadelphia 40-AF, Pa.
Gray Marine Motor Co., 646 Canton Ave., Detroit, Mich.
Hercules Motors Corp., 101 Eleventh St., S.E., Canton, Ohio
Hubbs Engine Co., 1168 Commonwealth Ave., Boston 34, Mass.
Lister-Blackstone, Inc., 42-32 21st St., Long Island City 1, N. Y.
H. O. Penn Machinery Co., Inc., East River and 140th St., New York, N. Y.
Perkins Machinery Co. Inc., Exit 53 Route 128, Needham Hts., Mass.; 4 Water St., Fairhaven, Mass.
Petter Engine Div., Hawker Siddeley Brush Inc., 34-14 58th St., Woodside 77, N. Y.
Waukesha Motor Co., Waukesha, Wisc.

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Marine Engine Division, Chrysler Corp., 12200 E. Jefferson Ave., Detroit 15, Mich.
Ford Marined Engines, 3627 N. Lawrence St., Philadelphia 40-AF, Penna.
Gray Marine Motor Co., 646 Canton Ave., Detroit, Mich.

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Marine Construction & Design Co., 2300 Commodore Way, Seattle 99, Wash.
Westerbeke Fishing Gear Co., Inc., Fish Pier Road, Boston 10, Mass.

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Hope Fish Netting Mills, Inc., Hope, R. I.
The Linen Thread Co., Inc., Blue Mountain, Ala.
Moodus Net & Twine, Inc., Moodus, Conn.
Marlon, 1453 West 123rd St., Los Angeles 47, Calif.
Joseph F. Shea, Inc., East Haddam, Conn.
A. M. Starr Net Co., 10 Summit Street, East Hampton, Conn.
Western Trawl & Supply Co., Freeport, Texas.

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The California Oil Co., Perth Amboy, N. J.
Gulf Oil Corp., Gulf Bldg., Pittsburgh, Pa.
Socony Mobil Oil Co., Inc., Marine Sales Dept., 26 Broadway, New York 4, N. Y.
Standard Oil Co. of California, Standard Oil Bldg., San Francisco, Calif.

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Glass Plastics Corp., 1605 W. Elizabeth Ave., Linden, N. J.
Henderson & Johnson, Inc., Gloucester, Mass.
International Paint Co., Inc., 21 West St., New York, N. Y.
Pettit Paint Co., Belleville, N. J.
C. A. Woolsey Paint & Color Co. Inc., 205 East 42nd St., New York 17, N. Y.

PROPELLERS
Columbian Bronze Corp., Freeport, N. Y.
Federal Propellers, Grand Rapids, Mich.
Ferguson Propeller and Reconditioning Co., 1132 Clinton St., Hoboken, N. J.
Michigan Wheel Co., 1501 Buchanan Avenue, S. W., Grand Rapids, Mich.

PROPELLER RECONDITIONING
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Ferguson Propeller and Reconditioning Co., 1132 Clinton St., Hoboken, N. J.

PROPELLER REPAIRS
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Haskell & Hall, Inc., 36 Webb St., Salem, Mass.

PROPELLER SHAFTS
The American Brass Co., Waterbury 20, Conn.

PUMPS
Brodeur Machine Co., Inc., Pump Div., 62 Wood St., New Bedford, Mass.

RADAR
Bendix Aviation Corp., Pacific Div., 475 Fifth Ave., New York 17, N. Y.
Kelvin & Hughes American Corp., Box 1951, Annapolis, Md.

RADIO TELEPHONES
Applied Electronics Co., Inc., 213 E. Grand Ave., South San Francisco, Calif.
Kaar Engineering Corp., 2915 Middlefield Rd., Palo Alto, Calif.
Northern Radio Co., 314 Bell St., Seattle 1, Wash.

RANGES—Galley
"Shipmate"—Shipmate Stove Division, Souderton, Pa.
"Shipmate" and "Webbperfection" — Elisha Webb & Son Co., 136 S. Front St., Philadelphia 6, Pa.
Harry C. Weiskittel Co., Inc., 4901 Pulaski Highway, Baltimore 24, Md.

REDUCTION GEARS
Auto Engine Works, Inc. 333(A) North Hamline Ave., St. Paul 4, Minn.
Paragon Gear Works, Inc., 628 Cushman St., Taunton, Mass.
Snow-Nabstedt Gear Corp., Welton St., Hamden, Conn.
Twin Disc Clutch Co., 1341 Racine St., Racine, Wisc.
The Walter Machine Co., Inc., 84 Cambridge Ave., Jersey City 7, N. J.

SHIPBUILDERS
Anderson Boat Works, Thomaston, Me.
Blount Marine Corp., Warren, Rhode Island.
Diesel Engine Sales Inc., St. Augustine, Fla.
Harvey F. Gamage, So. Bristol, Maine.
Gladding-Hearn Shipbuilding Corp., 1 Riverside Ave., Somerset, Mass.
Lash Brothers Boat Yard, Friendship, Me.
Newbert & Wallace, Thomaston, Me.
Frank L. Sample & Son, Inc., Boothbay Harbor, Me.
Story Marine Railway, 257 Front St., So. Portland, Me.

STARTING FLUID
Spray Products Corp., P. O. Box 844, Camden 1, N. J.

STEERING GEAR
Crowell Designs, Inc., 2106 Bridge St., Point Pleasant, N. J.

STERN BEARINGS
"Goodrich Cutless": Lucian Q. Moffitt, Inc., Akron 8, Ohio.

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Brownell & Co., Inc., Moodus, Conn.
Columbian Rope Co., Auburn, N. Y.
Andrew Crowe & Sons, Inc., Tiogue Ave., Coventry, R. I.

VOLTAGE REGULATORS
Safety Industries, Inc., Box 904, New Haven 4, Conn.

WINCHES
Hancock Marine, 1567 No. Main St., Fall River, Mass.
Hathaway Machinery Co., Inc., New Bedford, Mass.
Stroudsburg Engine Works, 62 North 3rd St., Stroudsburg, Penn.

WIRE ROPE
John A. Roebling's Sons Corp., Trenton 2, N. J.

FOREIGN BAILINGS

A NEW MANEUVERABLE TRAWL has been sucessfully tested by Germany. The West German motor trawler *Rendsburg* during a trial trip to the Irish Sea and the English Channel tested a pelagic trawl which, like the floating trawl, can be set in any desired position in the sea. The experimental trip was a link in the West German ocean fishery's program for seeking new fishing grounds. The boat fished with various new pelagic, synthetic fiber trawls developed in cooperation with the Fishery Research Institute in Hamburg.

Each trawl was directed by a sounding device which had an echograph on the headrope. This made it possible for the skipper on the bridge to check the depth of the trawl, the height of the opening, and even all the fish which passed the trawl opening.

MECHANICAL OYSTER HARVESTING in the form of a rubber-tired scoop that trundles along the ocean floor jet-blasting oysters from their beds and hauling them to the surface, has been developed by the Fisheries Research Board of Canada and the Industrial Development Service of the federal Department of Fisheries.

The machine utilizes powerful water jets to wash shellfish into a scoop and onto a conveyor belt which carries them to the surface. The scoop was equipped with rubber-tired wheels to prevent it from digging into the soil and the water jet system was changed so that it could lift oysters off the bottom without disturbing the soil. It disturbs the bottom so little that to discover where fishing has been done places where there are no oysters must be found.

In experiments on bottom where the densities of oysters were about one per three square feet, the machine travelled 150 feet per minute and gathered oysters at the rate of about one bushel per minute, with three men tending the escalator belt.

JAPANESE STERN TRAWLERS to be built for fishing off Africa and Australia. The Shimonoeski Branch of a large Japanese fishing company has announced that as part of its 1960 operating plans it will build two 1,500-ton stern trawlers and will enter upon the development of new fishing grounds off Africa and Australia. Two other large fishing companies have also been announcing various plans for the construction of large trawlers for fishing in new distant areas.

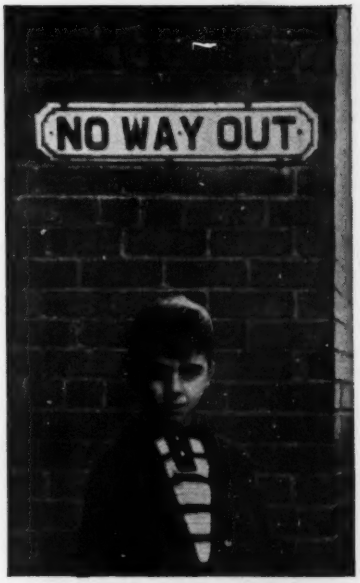
This is the result of crowding on the grounds of the East China Sea and restriction in the North Pacific salmon fishery. Since the company building the two large stern trawlers has been heavily engaged in North Pacific salmon fishery, restrictions in that fishery have had a considerable effect on its operations.

BAG-NET FOR CATCH PICK-UPS at sea has been developed by United Kingdom. The net is braided with a mesh smaller than fishing net mesh. One end is tied up like a cod end, and the net is dropped down the fish room hatch and the other end secured open.

Gutted fish are dropped into the open end and when filled, the net holds about a ton of fish. It is tied up at the top and lowered over the trawler's side, secured to a buoy. It is then picked up by a mother ship.

Index to Advertisers

Allied Diesel Sales & Service, Inc.	33	The B. F. Goodrich Co.	5
Allis-Chalmers	6	The Harris Co.	38
W. A. Augur, Inc.	34	Hope Fish Netting Mills, Inc.	6
Auto Engine Works, Inc.	35	Hubbs Engine Co.	38
Barr Marine Products Co.	35	Lucian Q. Moffitt, Inc.	32
Bay State Marine & Equipment Co.	29	Osco Motors Corp.	30
Brodeur Machine Co., Inc.	32	Paragon Gear Works, Inc.	40
Columbian Rope Co.	1	H. O. Penn Machinery Co., Inc.	27
Cummins Engine Company, Inc.	20-21	E. S. Ritchie & Sons, Inc.	31
Diesel Injection Products, Inc.	38	John A. Roebling's Sons Corp.	27
Essex Machine Works, Inc.	35	Ships & Power Inc.	34
Isaac Fass, Inc.	31	Socony Mobil Oil Co., Inc.	39
Gladding-Hearn Shipbuilding Corp.	38	A. M. Starr Net Co.	28
Glass Plastics Corp.	4	Story Marine Railway	34
L. M. Goff Co.	35	The Walter Machine Co., Inc.	34
		Waukesha Motor Co.	2
		Western Trawl & Supply Co.	38



OR IS THERE?

Leukemia now gives its young victims only months of life. But there *is* hope for those with this form of cancer. That hope is research.

Research has already extended the lives of many leukemia patients by months and even years. Research alone can find a way to stop this cancer of the blood-forming tissues once it has mysteriously begun. And every day that a leukemia patient lives allows science one more day to find a cure —or even a new way to extend his life a little longer.

Every year leukemia kills 2,000 children and 10,000 adults, and the incidence is rising. Every year the American Cancer Society allocates more and more money to research specifically related to leukemia. Last year, it allotted nearly $1,000,000 to such research, out of a total research expenditure of about $12,000,000. Much more money is needed this year. The more you contribute, the faster research on leukemia and other forms of cancer will progress. Guard your family! Fight cancer with a checkup and a check! Send your contribution to "Cancer," in care of your local post office

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Authorized Distributors of Industrial and Marine Engines—

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Cruisers, draggers, auxiliaries—all types and sizes. If you are in the market for anything in that line, please write us—no inquiry too small to merit attention. KNOX MARINE EXCHANGE, INC., CAMDEN, MAINE.

SHRIMP TRAWLER WANTED

Wanted: shrimp trawler. About 60 feet, 150 hp. or up. Used, but in good shape. Send full details. R. Richards, 585 NE 125th St., N. Miami, Florida.

COMMERCIAL FISHING BOATS

The Right Vessel & Equipment to Suit Your Requirements. Prompt attention to New Listings. EDWIN B. ATHEARN, Marine Agent, 197 Palmer Ave., Falmouth, Mass. Telephone-Kimball 8-1447.

FOR SALE

World War II subchaser *Lynn II* 110′ x 19′ x 7′ twin screw Burmeister & Wain 180 HP engines practically new. Fully equipped with radio telephone, direction finder, radar. Two large holds, one refrigerated. Hull and all equipment excellent condition. Formerly dragger and scalloper converted to cargo. Easily reconverted to fishing. Selling due insufficient cargo work. Perry B. Duryea & Son, Inc., Montauk, L. I., N. Y. MO 8-2410.

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2300 barrel steel oil barge, with 6" Viking pump, Caterpillar power unit. Sound and under Coast Guard inspection. The Hitchcock Gas Engine Co., 40 California St., Bridgeport 8, Conn.

SEA SHELLS WANTED

We buy sea shells by the ton or single specimens. Reliable appraisers and buyers of all kinds sea shells, sea horses, starfish, urchins and other marine creatures. Mail your samples along with an estimate of the quantity you can supply. Sea Shell Supermarket, U.S. 41, Palmetto, Fla.

FOR SALE

Dragger *Aerolite*. Maine built, 57′ long, 14′7" wide, 6′2" draft. 100 hp. D-11000 Cat. Hathaway winch, radiotelephone, depth sounder. Write Lands End Marine Supply, 337 Commercial St., Provincetown, Mass. Tel. 784.

SELL YOUR BOAT OR EQUIPMENT WITH A CLASSIFIED AD

Readers of National Fisherman look to the "Boat & Gear Mart" when they want to buy boats, second-hand equipment and fishing gear. Users of this service report excellent results. It is an easy, inexpensive way to let them know what you have to offer. Sends us details on what you want to sell; we will prepare an appropriate ad. The cost is only $1.00 per line (count 9 words to line) with a minimum charge of $5.00. National Fisherman, Goffstown, N. H.

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BRAND NEW GM—SERIES 71 COMPLETE INJECTORS

Never before offered at this low price.

90 mm $7.00 each — 60 mm $18.00 each

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Government Surplus Perfect

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Specializing in Fishing Boat Supplies

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Electronics — Fuel — Groceries

STEEL FISHING BOATS

Gladding-Hearn SHIPBUILDING CORPORATION

SOMERSET, MASS.

For The Finest Shrimp-Trawls—Any Type

WESTERN TRAWL & SUPPLY COMPANY

HOME OF "WESTERN JIB" TRAWLS (U.S. PAT. 2,816,386)

FREEPORT, TEXAS

MARLON OR COTTON NETTING — ROCHESTER WIRE ROPE — NEW BEDFORD CORDAGE

"Every time I pull a piston, I'm amazed how clean Mobil Marine Oil keeps my engine!"

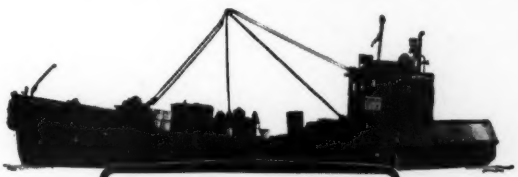
says owner of the Mother Frances out of Boston

Sam Passanisi, owner of the Mother Frances, likes to claim that his 6-cylinder Atlas-Superior diesel is the "cleanest engine in the Boston Fleet!" Other Skippers sometimes give Sam an argument on that, but even they agree Mobil Marine Oils keep diesels amazingly *clean* and *trouble-free*.

When the Mother Frances is ready to take aboard its diesel fuel and lube oil, it doesn't have to look twice for service. The Neptune, one of two Mobil dealers' tankers in Boston, is right there beside it. "Those guys never sleep!" says Sam, of the crew of the sturdy little tanker.

Top-quality products and untiring service—two big reasons why you should "make it Mobil" for your fishing vessels.

SPECIFY A MOBIL MARINE OIL FOR BETTER **NET** RESULTS!



Mobil

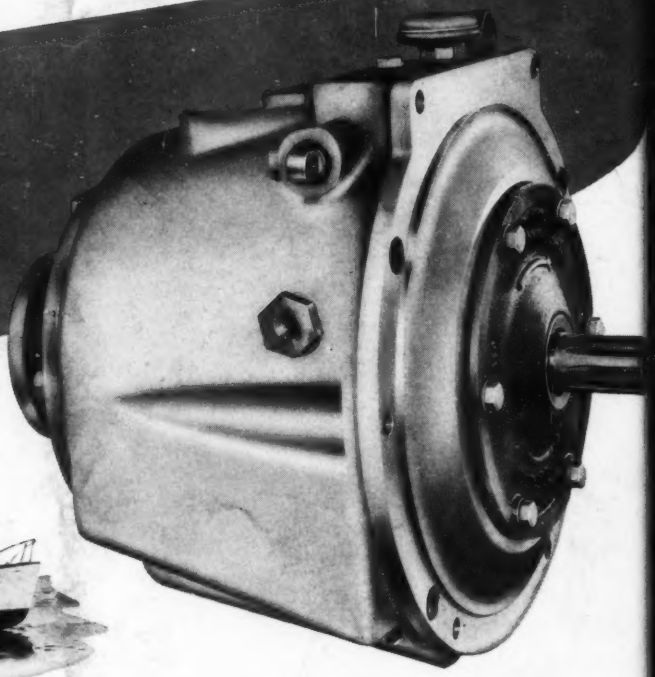
MARINE PRODUCTS

MOBIL OIL COMPANY, Department 26
150 East 42nd Street, New York 17, N.Y.

NEW PARAGON "H-A" Series

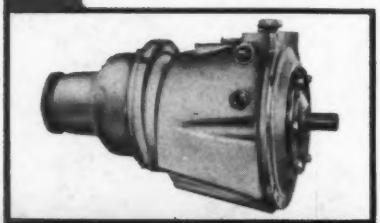
WORLD'S FINEST MARINE TRANSMISSIONS

Another Paragon advanced design keyed to modern-day marine engines



Only a specialist in marine transmissions can provide

ALL these custom engineered features



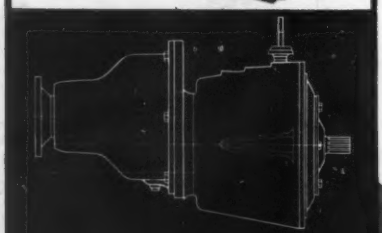


Photo shows new "H-A" transmission with reduction gear in "above" position. Diagram illustrates offset advantage which permits "above" or "below" centerline installation.

MORE POWER — less weight. Fewer parts and new lightweight alloys mean more payload per pound—even with engine capacities to 300 h.p.!

POSITIVE POWER that is fast, flexible and "*cushion-clutch*" smooth through push-pull control in both forward and reverse.

SIMPLIFIED INSTALLATION with *offset design*. Change in conversion ratio accomplished *without* change of entire transmission. Simplified control cable attachment. Easier installation in cramped quarters.

AUTHORITATIVE ASSISTANCE in fitting the right Paragon model to the specific service requirements.

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